

THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS ILLUSTRATED ESTABLISHED 1835 **THE RAILWAY OFFICIAL GAZETTE**

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Annual subscription £3 10s. 0d. post free. Single copies, One shilling & sixpence
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 94]

FRIDAY, APRIL 27, 1951

[No. 17

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Railway Freight Charges Debate

AS was generally expected, the proposal of the British Transport Commission to secure an increase in railway freight charges was hotly assailed when prayers presented by the Opposition were debated in the House of Commons on Tuesday last. A feature of the debate was pressure from more than one member for the establishment of an inquiry into the railways. The suggested terms of reference for such an inquiry, however, were so vague and general that if it were to be undertaken, and the question of any increases in charge deferred until after its findings were announced, all hope of maintaining transport in a state even approaching solvency might well have to be abandoned. The Minister, in replying to the debate, said that "his mind was not closed" to the views which had been expressed, but he gave no indication that an inquiry of the kind suggested was being considered by the Government. Emphasis was laid on the effect which higher railway charges would have on the general industrial price level, but on the other hand some of the increases which have occurred in the costs which the railways have to meet—ranging from 200 per cent. for coal to 320 per cent. for clothing and 420 per cent. for brass bars—since 1939 were also brought out. As one member pertinently asked: "Who could run a business, pay these higher charges, and make a profit by increasing his own costs

only by about 55 per cent.?" In our view, one of the gravest difficulties which has arisen in connection with the increase in railway charges is its bad timing. If, soon after the war, railway charges had been adjusted to the general advance in the price level which then obtained, the impact would have been absorbed far more easily in the industrial conditions then obtaining, and much of the present outcry would have been avoided. There has never been any valid reason why the railways, alone of the nationalised industries, should have been forced to operate on a level of charges so far below not only their economic level, but also the general price index of the country.

The Summer Train Services

AMONG the improvements in British Railways services this summer announced by Mr. John Elliot, Chairman of the Railway Executive, on Wednesday, are the acceleration of over 150 trains and the introduction of 23 new cross-country services. The summer schedules will operate from June 18 to September 23. There will be many new services on main lines and a number of pre-war trains will be restored for the first time. Many trains run as reliefs last summer will run regularly and will appear in the public timetables. Additional services will be brought into the standard departure time arrangement, and more non-stop runs will be made. Seven "Festival of Britain" expresses, composed of new standard stock, will be introduced on April 30, in advance of the summer schedule. The "Golden Arrow" will consist of new Pullmans throughout. Twelve extra sleeping-car services will operate each week; it is hoped to introduce by June 18 the first of 21 third class sleepers of new design. By the end of the year 920 new standard coaches of eight types and 122 standard engines should have been completed; about 30 of the locomotives will be ready by the beginning of the summer timetable. The 1951 permanent way relaying programme covers 1,973 miles—39 more than in 1938. Mr. Elliot stressed that British Railways were making these achievements with a total of 599,000 on the payroll; they were some 20,000 men short of requirements, particularly in the operating grades.

Schuman Plan Signed

THE Schuman Plan setting up a European coal and steel community was signed in Paris on April 18 by the representatives of Belgium, France, Italy, Luxembourg, the Netherlands, and Western Germany. The text is not yet issued, and the particulars so far available are in a declaration read by Monsieur Schuman, the French Foreign Minister. It stated that the six countries had felt convinced that peace could be preserved only by an organised Europe, and that this could be effected only by establishing a common basis for economic development. He earnestly hoped that other countries would share in their endeavour. (It may be recalled that the British Government declined to enter in the discussions on the plan last year in Paris on the grounds that that implied "unequivocal acceptance of the principle of supra-national authority.") The signatory countries would examine other pool proposals. "These initiatives," said Monsieur Schuman, "ought rapidly to be inscribed within the framework of a political community, the idea of which is being developed at the Council of Europe." The declaration, it was learned, referred to proposals for a European agricultural pool, a railway transport pool, and a plan for pooling electrical power stations. It is not clear what system of tariffs will be adopted for coal, iron, and steel haulage.

British Trade with Argentina

THE long drawn-out negotiations between this country and Argentina on the resumption of shipments of meat reached finality this week. There have been divergent views on the policy adopted in these talks, particularly among those who are acquainted with the South American market. One point, however, which is of direct interest to British manufacturers of railway equipment was

brought out by Sir Archibald Boyd, Chairman of the Railway Carriage & Wagon Building Association, in a letter to *The Times* published last week. He pointed out that, while this controversy has been proceeding, the important Argentine market for British industrial goods has been entered by competitors. He instanced the fact that the Argentine Government, without inviting tenders from Great Britain, recently has placed orders in Holland for carriages, diesel railcars and diesel locomotives to the value of some £20,000,000. All this rolling stock could have been supplied by the British makers who during the past century have provided the bulk of the carriages and wagons imported into Argentina, and who are thoroughly conversant with the requirements of the railways in that country. These orders would have afforded employment to some hundreds of skilled British workers.

Argentine Railway Economics

WHEN, as reported in our March 9 issue, President Peron told the Argentine railwaymen's unions of the loss by the railways of "a thousand million pesos," it was presumed that he meant an annual aggregate loss. Our contemporary, *The Review of the River Plate*, in summing up the precarious situation of the Argentine railways, points out that in 1947-48 the aggregate gross revenue of all the railways was only 945,000,000 pesos. On the basis of the figures so far available, the aggregate revenue for 1949-50 may be put at 1,700 million pesos, but the increase is almost entirely the result of increased freight rates. The freight tonnage in 1945-46 is stated to have totalled some 52,914,000 tonnes; it had dropped to 34,936,000 tonnes for the first eleven months of 1949-50, from which a tonnage of some 38,000,000 may be estimated for the complete year. As the journal observes, the increase in freight rates is no remedy for economic maladjustment. More drastic measures are needed, and we learn that a new plan for the administration of the railways in which there would be a new directorate under the presidency of the Minister of Transport, with Regional managers as in Britain, is awaiting approval.

Construction for High Speed

NOWADAYS, when so little railway construction is undertaken, the building of a new main line solely for high-speed traffic is rare. Between Brookfield and Missouri Junction, near Kansas City, the Chicago, Burlington & Quincy Railroad, is constructing a new cut-off designed for 90-m.p.h. passenger and 60-m.p.h. freight train speeds. It is being built in accordance with the policy of bringing the whole of the Chicago-Kansas City route up to high-speed standard. From Chicago to Galesburg it is already suitable for such traffic, but in the 200 miles from Galesburg to Brookfield several sections are to be realigned and regraded both for speed and to reduce the distance by 10 miles. With the further reduction of 22 miles secured by the completion of the new line and the improvements just noted, it will be possible to cut the Chicago-Kansas City schedule to 7½ hr. as compared with the current 12- to 13-hr. passenger train bookings. The standards and methods of construction of the line, which has no station in 71 miles, are of great interest and the work is described elsewhere in this issue.

Non-Stop Runs without Water Pick-up

THE 112.5-mile runs in each direction made by the "Enterprise" expresses of the Great Northern Railway (Ireland) between Dublin and Belfast, and described in our April 13 issue, are the longest non-stop journeys regularly booked in Great Britain or Ireland without any facilities for replenishing the locomotive water supplies from track-troughs. They are more notable in that the tender tank capacity of the engines used, according to type, is no more than 3,500 or 4,000 gal. Coras Iompair Eireann also runs the Belfast-Cork "Enterprise" non-stop over the 110.6 miles between Dublin (Amiens Street) and Limerick Junction both ways without stopping, with 4,000 gal. tenders. In England the 107.9 miles of the pre-war

"Bournemouth Limited" of the Southern Railway, also with the 4,000 gal. tender of the "Schools" 4-4-0 locomotives usually used, has been the extreme limit in recent years, though in the highly competitive days of the East and West Coast Anglo-Scottish competition, the "Caledonian" often in summer ran the 150.8 miles from Carlisle to Perth, climbing Beattock and Gleneagles summits included, without a stop and without water-troughs. Such runs fall far short of the regular pre-war non-stop runs with steam on the mainland of Europe, between Paris and Liège, Nancy, Brussels, and Calais, 226.7, 219.1, 193.1, and 184.1 miles in length respectively, but with the somewhat uneconomic haulage of high-capacity tenders to provide sufficient water. The Paris-Calais runs have been revived since the war.

Uses for Scrapped Boiler Tubes

THE uses to which old boiler tubes may be put have been long appreciated. For several decades in India they have been fabricated and erected as effective palisade fencing on platforms and round store yards. The top ends of the tubes are split and the two halves splayed outwards as sharp points. At the present time in America, the wholesale replacement of steam locomotives by diesels, and the acute shortage of steel, have suggested their re-use for many purposes. On the Toledo, Peoria & Western system, for instance, their relative lightness, strength, and ease of welding have been put to good effect in their adaptation as frames and roof trusses for small buildings, stores rack supports, railings, fencing, gates, ladders, and piping. Large superheater flues cut in half longitudinally have been used as roof guttering. The piping of all diesel fuel-oil installations on that railway now consists of boiler tubes and they have been incorporated in a lean-to extension of a machine shop and a sand-drying shed.

Train Heating with Diesel Traction

THE development of diesel-electric and other forms of railway traction other than steam is being hampered by a factor which has nothing to do with the efficiency of the motive power itself. It is the heating in winter of trains drawn by locomotives of these types. The L.M.R. main-line diesels Nos. 10000 and 10001 and the Western Region gas-turbine-electric locomotive No. 18000 have had to be taken off express passenger work in cold weather for this reason. Even in the United States it has not been unknown for steam locomotives to be used as pilots for diesel-hauled passenger trains mainly to provide steam heat. The difficulty is twofold: it is, first, that of installing a heating boiler of adequate capacity, and, second, that of installing water storage tanks large enough to supply the boiler over long distances, within the limited space available on or below the chassis. The latest U.S.A. steam generators have a capacity of 4,500 lb. of steam an hr. and are supplied with water from 1,200-gal. tanks placed under the engine under-frame. Several American railways have built or adapted separate vehicles to supply train heat, but chiefly for use if a freight diesel without steam boiler has to be used in passenger working.

Relay Interlocking in France

THE tendency in France to turn to relay interlocking is illustrated in a recent issue of *Notre Métier* published by the S.N.C.F. which describes the new arrangements at Gagny. This junction forms a triangular connection between the Grande Ceinture line and the main line of the former Eastern Railway from Paris to Strasbourg to which the eastbound line from the Ceinture has a burrowing approach. These junctions had been worked for about 30 years by an electric signal box having an individual lever type frame of Thomson-Houston design, and, because this would have to be overhauled and modified in connection with the installation of colour-light signalling between Argenteuil and Juvisy, it was thought better to make a complete change to relay interlocking. This had the further advantage of allowing the new equipment to

be connected up ready beforehand and facilitating the final change-over. The lay-out is not large, but traffic conditions call for special locking facilities, and at times the train service is heavy. The new panel is especially neat in appearance, and measures only 1 ft. 6 in. long by 9 in. deep, below which is a small sloping desk carrying the operating keys which are double acting, the whole resting on a table alongside the telephone board.

Points of View on Railways

WHETHER under private or public enterprise there has never been any lack of diversity of view as to the current efficiency or probable destiny of railways in this country. Elsewhere in this issue is published a letter from Lt.-Colonel Sir Michael Peto, in which he sets out his ideas as to the present position of the railways, the causes of the malaise which he diagnoses, and his suggestion for a cure. Sir Michael Peto is not without experience of transport matters, although his closest association, perhaps, has been with the military rather than the civil side. He has contributed letters to our columns before, and we hope that he will again. At the same time, in publishing his letter we take leave to point out not only that we disagree with some of his conclusions, but also, in some cases, with the factual content of it.

We do not believe for one moment that British Railways are dying, as Sir Michael Peto suggests, any more than we agree that they "deliberately strangled the canals in the last century." On the first point we would suggest that, considering the anaemia from which British Railways necessarily are suffering as the result, first, of five years of actual participation in an all-out war effort during which they were starved, not only of replacements, but of much-needed renewals, and, secondly, of a further six years in which they have been denied the necessary transfusions of capital expenditure to revitalise them, they are a good deal more lively than might have been expected. They are still performing more work than they did before the war.

We are in complete agreement with Sir Michael Peto when he suggests that transport should be put outside the scope of party politics; that nationalisation must be accepted, and that there is ample room for grafting on to the present system some of the best features of private enterprise. We are not too clear as to what Sir Michael Peto means when he refers to the marriage of the Civil Service and the railway service, but we would agree that any tendency towards the infiltration of Civil Service mentality and practices into the railways, which must ultimately remain a commercial organisation, is wrong and should be resisted. Even today there is often confusion as to the status of the railway personnel and that of similar State-owned organisations. There can be no grounds for any belief that the railwayman is a Civil Servant. We dealt with this question at some length in our issue of September 5, 1947. We explained then that railway employees under nationalisation remain in precisely the same position in this respect as they did before nationalisation; that is to say, they are employees of a statutory corporation, a term which covered the pre-nationalised railway companies. The railway or other transport servant has not become a Civil Servant and is not amenable to Civil Service conditions.

Whether the work of Public Relations Officers should be reorientated is a debatable point. In our view it is much better that not only these officers, but all railway officers in touch with the public, should consider that "finding out what the public wants in regard to facilities," and then endeavouring to provide them, should be part of their normal duty. In fact, we believe this is the case with most of the goods and passenger staff, although necessarily it varies a good deal according to the individual, and the effect of their work is largely dependent on the decisions taken at a higher level.

There can be no dispute as to the desirability of salaried and conciliation staff giving greater co-operation; discussions to this end are being actively pursued at the present time. But when Sir Michael Peto says that "the Govern-

ment must allocate at once finance, materials and manpower to revivify the railways" he is stating an obvious need but stepping outside the realm of practicability at the present time. His American example of the result of a cut in passenger fares is interesting, and, in its way, is in line with what British Railways have tried to do by offering concession rates. A good many will share his point of view. The problem in the United States, however, is quite different from that in this country.

To say that "road and rail transport must be co-ordinated and interlocked at once" is to disregard the magnitude of the problem which is involved in the statement. When it is said, too, that the railways must be given fair treatment and a square deal, the words are practically meaningless, taken by themselves. Is it "fair treatment" and "a square deal" to expect the railways alone of the major services providing goods and services in this country to operate on a lower price level than any other? It may be that the public is entitled to "travel about the country swiftly, cheaply, and comfortably, and their merchandise also," but should it in equity be expected to achieve all this at a cost well under 100 per cent. above pre-war, when for everything else that it has to buy it must pay something of the order of two-and-a-half times as much as it did in 1939?

We are all in favour of fresh ideas and a new outlook and particularly the abandonment of all kinds of prejudice, but in our view the greatest safeguard against any possibility of the railways "finally perishing" is to bring to bear to the railway problem a practical appreciation of the difficulties that face them, and endeavour to remove the disabilities from which they suffer in comparison with some other major industries of the country.

U.S.A. Transportation Industries, 1889-1946

THE National Bureau of Economic Research is an American institution, whose object is to present to the public economic facts and their interpretation in an impartial manner. Nine of the directors of the Bureau are appointed by universities, including Harvard, Yale, Cornell, and Pennsylvania, and it has a large research staff. One member of the staff is Mr. Harold Barger, who was for several years a lecturer in political economy at University College, University of London, and is now associate professor of economics at Columbia University. He has recently completed a study of the output, employment and productivity of the U.S.A. transportation industries during the period 1889-1946* and, through the courtesy of the Bureau, we have had an opportunity of examining his analysis of transport developments from the time when railways employed 4 out of 5 of the million workers engaged in traffic movement.

By means of a wealth of statistics and many diagrams, Mr. Barger shows that by 1920 transport employed 2,500,000 men, the proportion of railwaymen not having changed much. In 1946 rather fewer people were engaged in transport and only half of them worked on railways. Traffic rose more rapidly than employment. The output of service in 1939 was three times and in 1946 four times the 1889 level. Over the 50 years 1889-1939 productivity in transport industries increased at an average annual rate of 2.2 per cent., as compared with an additional annual output of 1.8 per cent. in manufacturing and 1.6 per cent. in agriculture and mining. The change in output has been greater, as one would expect, in the newer transport agencies, such as airlines and pipelines, than on old-established railways and waterways.

Mr. Barger reviews the varying conditions under which the U.S.A. railways have operated in detail, but we doubt whether his presentation of the facts adds to our knowledge of the position as revealed from year to year—and in some cases from month to month—in the Association of American Railroads' publications. An academic study cannot be sufficiently up-to-date to help the practical men

* "The Transportation Industries, 1889-1946." By Harold Barger. New York, U.S.A.: National Bureau of Economic Research Inc. 9 in. x 6 in. 288 pp. Price \$4.

who are wrestling with present-day problems. They are far more likely to benefit from the A.A.R. research activities, which are directed from its central research laboratory at Chicago and deal with improvements in railway plant, equipment and methods of operation. The A.A.R. also has a Division of Competitive Transport Research which studies road services, the development of airports and airways, the economics of inland waterways and the relation of all these transport agencies to the railways. The work of these organisations has a direct bearing on the production of more passenger-miles and ton-miles for each railwayman employed and is expanding.

New British Coach-Building Enterprise

IT is gratifying to be able to announce a new development in British industry based on scientific calculation in design and exhaustive practical tests. This we do in describing the first British-built lightweight electric motor coaches recently completed by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for the Great Indian Peninsula and Bombay, Baroda & Central India Railways. The description takes the form of an article in four parts appearing in this and future issues. These new vehicles are nearly 18½ tons lighter than the conventional motor coaches at present in service on those railways, the saving in weight being about 26 per cent. It should be noted that this high percentage reduction is effected in a motor coach complete on rails, of which the bogies and electrical equipment obviously contribute a large proportion of the total weight, whilst the weight of these components is practically irreducible. If the same principles of design are applied to trailer or ordinary coaches a considerably higher percentage may be expected.

Without discussing the many interesting practical and theoretical details involved, brief mention may be made of the salient features of these coaches. Weight saving in the body structure has been achieved mainly by the use of steel sheet pressed or rolled to form: in the case of the more heavily-loaded parts high-tensile steel has been used, as also has aluminium alloy in the floor and roof sheets. The roof unit is 2 ft. deep and 11 ft. 4 in. wide. Apart from the fact that the central sheeting is of aluminium-alloy, a number of features combine to make the roof exceptionally rigid, not the least of these being the manner in which advantage is taken of its depth. Its sheets are attached to the main longitudinal members along their entire 68 ft. length, and the carlines are specially designed for strength. Moreover the monitor rails are 7 in. high-tensile "ZED"-section steel units running the full length of the vehicle. Along the lower edge of the roof an ½ in. mild-steel plate, which follows the roof profile for about 10 in., enables the bodyside and roof to be joined by a flush seam weld so that an effective upper bodyside beam is provided, capable of withstanding considerable compressive loads. Furthermore, the cantrail is composed of three high-tensile angles, two assembled with the bodyside and the third along the lower edge of the roof, so that a strong beam is formed from end to end of the coach when the two components are riveted and welded together. At each doorway large Alpac castings provide effective ties from floor to roof and help to distribute loads to all parts of the structure.

The floor structure also is exceptionally sturdy and includes 10 in. × 3½ in. channel solebars, running uninterrupted the length of the vehicle, and box-section bolsters 17 in. deep fabricated from ½ in. high-tensile plate. All fabricated parts are stress relieved after welding. The floor is of 16 s.w.g. aluminium-alloy corrugated sheeting. The bogies conform to Indian standard practice and are powered by one nose-suspended motor on each axle, supplied by the English Electric and British Thomson-Houston companies.

Considerable progress had already been achieved by good design based on experience, but the Metropolitan-Cammell designers realised that further appreciable reduction could be obtained only by ascertaining exact loadings, stress distribution, and deflection of members and groups

of members. To this end, the general stress and deflection characteristics of the structure were first assessed in great detail by theoretical methods, as may be seen from the principal diagrams and calculations reproduced in the article. Briefly, the results obtained for the whole vehicle showed that maximum loading would produce a total deflection of only about 0.25 in. as against 0.375 in. specified, and it is gratifying to note that subsequent tests gave a deflection of only 0.23 in.

Not satisfied with the general picture obtained by calculation, the engineers decided that true stresses and deflections of all detail parts were also necessary and could be ascertained only by a most comprehensive and elaborate system of tests, which also provided a check on the calculated values. For this purpose they designed and built a special test rig capable of taking the largest coaches at present envisaged, and of applying buffing loads up to 150 tons, and this is capable with additional equipment of applying loads up to 400 tons. Simultaneously, the equivalent of various vertical passenger loads can be applied by hand weights, correctly distributed over the coach floor. This ensures a more realistic distribution than the American and Continental jack-and-beam method of loading. It will thus be seen that—as described in Part 1 and Part 2 of the article—a thoroughly effective practical design, based initially on sound theory, has been evolved to combine lightness and rigidity. In Part 3, details of the rig and tests will be given, and in the concluding part production methods in the building of the coaches will be discussed.

British Standard Locomotives

THE first of the standard locomotives of British Railways designed and built under the direction of Mr. R. A. Riddles, Member for Mechanical & Electrical Engineering, Railway Executive, went into service a couple of months ago. This was the *Britannia*, a Class "7" 4-6-2 mixed-traffic locomotive, and representative of the first of six standard types which are due to make their appearance this year. Twenty-five of these Class "7" locomotives are due to be built during 1951, and four of them have already been placed in service on the East Anglia route from Liverpool Street Station, London, to Ipswich, Norwich, and the Norfolk Coast. This service is also to receive a number during the current year and the last ten will be allocated to the Western Region.

In our February 2 issue the locomotive was described and illustrated, and elsewhere in this issue are reproduced a folding plate of a drawing showing the main details and an illustration relating to the tender. A number of the considerations which weighed with the Railway Executive in the evolution of this design and also those of the other standard types were dealt with in a paper by Mr. E. S. Cox, Executive Officer (Design), Railway Executive, before the Institution of Locomotive Engineers on March 21. This paper was the subject of an editorial article in our March 30 issue.

Although the design of the locomotive is new, it incorporates a number of features from the former practice of the pre-nationalised railways. Among the objectives of the design were the utmost steam-producing capacity permitted by weight and dimensions, simplicity with the least number of working parts and those all readily visible and accessible, a high level of bearing performance, simplified shed preparation by extensive use of mechanical lubricators and grease lubrication, and reduction on the work of disposal by the use of self-cleaning smoke-box, rocking grate and self-emptying ashpan. Great importance was attached to progress in the direction of higher availability and lower maintenance costs, while efficiency is sought within the conventional layout by low rates of combustion, high superheat, and good valve events. It was considered that the axle load of 20½ tons would give the Class "7" locomotive a good main-line route availability, and it was intended that it should do the type of work previously done by such classes as the "Castle," "Rebuilt Scot," "V2," and "West Country."

The combination of two cylinders with a wide firebox

is unusual in recent British locomotive building practice. Forty per cent. of the reciprocating weights are balanced, which, together with reduction in weight of these parts, gives only half the hammer blow which was usual on earlier two-cylinder designs. On the other hand, it was considered that the use of multi-cylinders where two would perform the work required, would increase the weight of the Pacific type engines by some $3\frac{1}{2}$ tons and materially increase the first cost, as well as entailing greater preparation time and examination and repair costs because of the larger number of parts to be dealt with.

The second of the standard types of locomotive, a Class "5" 4-6-0, was introduced this week. Of these, 30 are being built this year at Derby for mixed-traffic service in the London Midland Region and the Scottish Region.

Signal Aspects in Sweden

THE paper read before the Institution of Railway Signal Engineers on April 4, 1951, by Mr. Ture Hard, Signal Engineer of the Swedish State Railways, reported elsewhere in this issue, describing the complete system of aspects used by those lines in all their modern electrical signalling installations, was of interest in more than one way. The framing of a system of indications to meet all the conditions met with on a main-line railway, where many circumstances have to be catered for, has long exercised the attention and ingenuity of both signal engineers and traffic officers all over the world. It is reflected, not only in many proposals never carried into effect but in the widely divergent methods of the different countries. The process is even now, it would seem, not at an end, for as shown in our issue of March 2, 1951, the Netherlands Railways have introduced at s'Hertogenbosch Station yet another arrangement of aspects, which is to be applied henceforward when new signalling works are undertaken. The system in Sweden has been in use for many years; the initial large installation, incorporating most present methods, was put in at Malmö in 1925.

Apart from the general interest of any, and especially any new, system of signal indications, the introduction of those adopted at Malmö was particularly noteworthy as it marked a breakaway, taken on Mr. Hard's advice, from long-established methods, to which the general name of Central European is frequently given. These methods came in the first place from Germany, but prevailed in turn, with but slight modifications, in several other countries, including the Scandinavian. The essential features of this system were that signals, in the ordinary sense, were provided only for running movements, shunting being carried out by verbal orders, supplemented at times by horn, whistle and lamp signals, with the aid of indicators working with the points themselves and with which, with rare exceptions at one time, all points were equipped. This practice, although reducing the number of ordinary signals and hence their actuating levers, to a relatively small number, necessitated a large number of point indicators with their lanterns for night working. Considerable complications arose where there were many double slips, although various systems of making a single indicating lantern serve for a set of such switches, gradually came to be adopted.

Two other consequences followed from this. The more important was the necessity of having all points made trailable without damage, as long as no running signal reading over, or in association with, them had been put to the clear position; this involved designing both the switches and their actuating mechanisms specially to give this facility. When working with point indicators the risk of points being forced over is appreciable, although it is strictly prohibited knowingly to take any switches from the wrong direction. This requirement brings in turn complications in the construction of the locking frames, or in the operating and detecting circuits in power installations. The other consequence is that certain special signals must be provided, in all but the simplest layouts, to prohibit shunting from being carried on where it is impossible to set any points as traps to running movements, as obviously the ordinary stop signals cannot be made to apply to shunt movements.

The disadvantages became especially noticeable in large junction stations, particularly where long-distance trains were divided and re-formed, and through coaches passed from one to another. This led to several special and even peculiar signals being devised in an endeavour to bring at least the more important and regular shunt movements under some direct control from the signalbox, so simplifying and accelerating the working. In Germany particularly a number of measures was resorted to in recent years involving special signboards having the effect of modifying the character of the old shunting prohibition signals, combined with illuminated draw-ahead signs forming a kind of shunting signal resembling those long familiar to British railwaymen. To deal fully with the course these developments took would require lengthy explanations, and it must suffice to say, that the benefits derived from them led to similar developments elsewhere, as for example in Switzerland, where a great improvement in conducting shunting at the large stations, such as Berne and Zurich.

These arrangements represent not so much complete change of working as an attempt to eliminate the more serious disadvantages of the widely-used Central European methods of station signalling, but on the Swedish railways a total break with tradition, in this respect at least, was effected. Mr. Hard's thorough acquaintance with signalling practice in Europe and America enabled him to do this with the co-operation of his traffic colleagues. From having no real shunting signals at all the Swedish lines went over to signalling every shunt movement completely. This had to be acknowledged by Mr. Hard's hearers, whatever opinions they may have had about the necessity of going so far, or the suitability or otherwise of the aspects adopted by him.

No doubt any system of aspects capable of meeting more than the simplest conditions, but which we have not seen before, is apt to appear more involved than it is. We find the array of point lanterns in a large German station at first bewildering to look at, while a German faced for the first time with the sets of bracket junction signals carrying distant and calling-on arms below, seen outside such stations as, say, Preston or Bradford, wonders how the British driver manages to interpret what appears to him to be a complicated system. The arrangements we have become accustomed to appear simple to us; to the experienced user of them they may well be so. Probably therefore a close study of what Mr. Hard has installed, combined with an attempt to see just how his signals would appear when applied to one of our layouts, might cause first impressions to give way to more favourable views. The simplicity of our own methods may not be so great as we are apt to imagine, but we are used to them. Many foreigners, for instance, find our "C," "S" and "W" signals a puzzle.

The use of flashing green and white in Sweden for distant indications may appear peculiar to us, but it has an historical explanation. When interlocking appeared there in 1888 German methods were followed and the stop signal showed red and green and the distant—a green painted round disc—showed green and white, the low height of the distant enabling its green light to be recognised and read correctly. Thus while red had then a double signification in England, green played a dual role in the Swedish system. With the adoption later of acetylene signal lighting the distant lamps were made to flash, thus effectively distinguishing distant from stop signals, both when "on" and when "off." The trials with flashing lights made long ago on the Furness Railway, referred to in the discussion by Mr. W. J. Sadler, aimed similarly at dispensing with the double meaning attaching to the red light here at that date. The use of double and triple green for diverging junction indications also dates far back in Sweden and it has been thought unnecessary to make any change. Admittedly it has disadvantages, but the English signalling engineer is no longer able to press them much, as one of them at least applies to his own now standard junction indicator arrangement, under which a diverging aspect contains more lights than a high-speed aspect, and precautions have to be taken to ensure that no lamp or circuit defect shall result in a false less restrictive indication appearing and misleading a driver.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Timetables and Train Running

April 16

SIR.—The article on "Timetables and Train Running" in your issue of March 9 deserves the widest possible publicity.

Observation frequently confirms that the faster trains are often the best timekeepers. I often see the tightly timed 8.10 a.m. up steam train from Basingstoke, allowed only 51 min. for the 48 miles. It has to thread its way through London suburban areas at the height of the morning rush hour, yet its timekeeping is surprisingly reliable.

There is another aspect of poor timekeeping and schedules that applies specially to the London Midland Region. The former L.M.S.R. pursued an odd locomotive policy, with the result that it handed over at most 364 good express passenger engines. It handed over a large stud of mixed-traffic 4-6-0s, which, good in their way, are nevertheless quite incapable of working heavy fast express trains. Up to now there has been no alternative but to roster a large number of these locomotives for such duties.

The Southern Region Pacifics, whatever their shortcomings as expressed in recent correspondence, can certainly work their trains to time. I think the same can be said also about the former Great Western.

Yours faithfully,

J. B. LATHAM

18, Wheatsheaf Close, Woking

Revitalising British Railways

SIR.—British Railways are dying. It may be a case of suicide, or possibly elephantiasis, or steatopygia, making their movements clumsy and ponderous, or it may be nemesis in the form of strangulation by other forms of transport, just as they brutally and deliberately strangled the canals in the last century. It is, however, a vital necessity for their death to be prevented, for both strategic and economic reasons. May I make a few tentative suggestions for discussion, as to how this might be achieved?

Put transport once and for all outside the scope of party politics. Nationalisation has been effected and must be accepted; but the Act can be amended in the light of experience, and a few of the best points of the old days of smaller companies and private enterprise might be welded on, such as local *esprit de corps*, and a limited amount of competition and healthy rivalry.

Both the Civil Service and the railway service are magnificent organisms, but their marriage under nationalisation is not altogether a happy one. They must be divorced for incompatibility; this will require some reorganisation at Ministry of Transport and Transport Commission levels.

An entirely new outlook *vis-a-vis* the public is required at Railway Executive level; P.R.O.s of Regions should be employed in finding out what the public want in regard to facilities, instead of trying to teach them what they ought to want, and telling the customer, when he complains, that he is always wrong.

The salaried staff and the conciliation grades must be educated by their trades union leaders to take a much longer and more balanced view, now that they have achieved better wages and conditions. In future their means of livelihood will depend on their co-operation, hard work, and pride in the job.

The Government must allocate at once finance, materials (especially steel and good quality coal), and manpower to revivify the railways. Fares and freights must be boldly cut; trains must be run well-filled instead of half empty. A year ago the Great Northern Railway in the United States cut its fares between Seattle and Vancouver by 32 per cent. to try to compete with buses, planes, and motor-cars. Its new fares were 10 per cent. lower than the bus fares, and its new diesel trains competed in speed with plane times (including travel to and from the airports). The railway has just reported "phenomenal increase in

business, ticket sales have shot up 224 per cent. above 1949, and revenue is up 156 per cent. more."

Road and rail transport must be co-ordinated and interlocked at once. Each form of transport must be dependent on and serve the other, and both must serve the public, who in 1951 are surely entitled to expect to travel about the country swiftly, cheaply, and conveniently, and their merchandise also. The railways must be given fair treatment and a "square deal."

If one of the old competitive trunk lines from London to the north were given over to freight train working only, the other lines would be freed from some of the congestion of slow-moving traffic, leading to faster trains, fewer delays, and smoother and more economical working. Perhaps the old Great Central Railway would be the best choice for this purpose.

By far the most important thing of all is to seek out and examine the special reason for British Railways lagging so far behind France, Italy, and many others in post-war recovery and advance, in spite of their desperate situation in the war. Fresh ideas, a new outlook, and the abandonment of all kinds of prejudice are needed now to prevent the railways from drifting on from bad to worse, and finally perishing.

Yours faithfully,

MICHAEL PETO

Dundonnell House, Ross-shire

British Railways Lettering

April 16

SIR.—Photographs of St. Pancras Station in your April 13 issue prompt me to write in protest against this dreadful Gill Sans complex that has descended like a blight on the railways. It has extinguished initiative and craftsmanship with its utterly machine-made appearance, having only legibility to claim for itself.

One supposes that, like nationalisation, where lettering is concerned there is nothing to decide—the style is settled, Gill Sans of course. Can anything look more bald and bare than the sign over the foot of the stairway from the street? What word in the language is ST? How one longs to see the old styles again on rolling stock, the handsome shaded letters, work of real craftsmen—even if they were transfers. But that, like so many other good things, costs money, so it is gone for ever.

Yours faithfully,

R. BARNARD WAY

3, Walden Road, Welwyn Garden

Staff Economies

April 12

SIR.—Now that it has been disclosed that only small economies are to be derived from closing branch lines, attention again concentrates on the cost of labour. Size makes it an obvious target for saving, but the most efficient employment of staff is ever present in the minds of all managers, railway managers no less than others. Some time ago I suggested in *The Railway Gazette* that in staff costs lay the only source of substantial economy, but added that if a variation is made in one factor the other factors of production must also be adjusted. In some instances I am convinced that there is a case for increasing the staff and for a thorough examination of the burden placed on the administrative organisation.

In a typical operating district (the railway production unit) I estimate that the administrative staff represents no more than 5 per cent. of the total operating staff. By any industrial standard this is a remarkable figure. In one of our largest and most successful private industries the administrative staff is 25 per cent. of the total production staff, while a business consultant of international reputation considers that anything below 30 per cent. gives no cause for anxiety. If my estimate is correct the railways

have achieved an unparalleled economy in "unproductive" labour. On the other hand, they may have reduced the administrative staff to a point below that which enables the staff extant to function with maximum marginal value. It is bad business to begrudge the ha'p'orth of tar.

It is also bad business to increase the staff just because others have not been so successful. Nevertheless, I question whether the present railway administrative staff "in the field" is able to devote the proper time to the unique problems of the minute-to-minute production of railway transport.

Now that the accent has shifted from economy to efficiency it is possible that the new committees will recall a famous wartime phrase—"Give us the tools"—and forsake past parsimony. If the terms of reference do not extend this far they can at least insist that power is not divorced from responsibility, and that the administrative staff is permitted to get on with running the railways, even without train crews, shunters, or coal.

Finally, I recommend that all instructions or enquiries inflicted on the "front line troops" are written in plain English, or, better still, not at all. With this in mind I suggest a poster complete with an accusing finger "Is your letter really necessary?"

Yours faithfully,
GEO. F. THOMLINSON

56, Stockens Green, Knebworth

Railway Efficiency

March 3

SIR,—Mr. E. R. B. Roberts, in his letter in your February 23 issue, admits that he does not understand railway statistics sufficiently well to make comparisons with pre-1914 figures, and for this he blames the "official" figures. Yet, in his misguided zeal to prove the inefficiency of British Railways at the present time, he does not hesitate to make a comparison between 1,800 million passengers, which, he says, the railways "claimed" they carried in 1913, and 950,000,000 (a figure well below the number of "originating" passengers carried on the railways operated by the Railway Executive in 1949), by this means seeking to give the impression that the railways are now carrying only about 53 per cent. in volume of their 1913 passenger traffic.

As anyone acquainted with railway matters knows, the real measure of work done in regard to passenger traffic is passenger miles, not journeys, and notwithstanding the substantial decrease in journeys, the passenger miles actually increased from 18,500 millions in 1913 to 21,000 millions in 1949, equal to more than 13 per cent. The explanation is the considerably increased average length of journey.

Mr. Roberts would be advised to avoid the use of statistics in support of his arguments in future, unless he is quite sure he understands them. With regard to his statement that he did not say the 1,800 millions were "originating" passengers, may I remind him that he gave the figure in reply to my request in your November 3 issue for "originating" numbers of passengers carried in a specific year before "controls" were introduced, compared with the corresponding figures for 1949. Incidentally Mr. Roberts has not replied to my query as to the bearing the number of passengers carried has on the efficiency or otherwise of "control." Two-thirds of Mr. Roberts's letter consists of a diatribe against the fares policy of the railways from 1923 to date—all quite irrelevant to the subject under discussion—and I do not propose to answer him in detail. I should like, however, to be allowed to inform him that:

(a) for the last time, the accountants have nothing to do with fares policy. At the present time, this is the responsibility of the commercial functional member of the Railway Executive, Mr. David B'ee.

(b) I do not account for anybody's claim to be making money by running excursions, and if one is to believe the evidence given by counsel for the Commission at the last hearing before the Transport Tribunal, the

Commission itself makes no such claim. My own views—those of an amateur like Mr. Roberts, but, I hope, a little more realistic—have already been expressed in articles in *The Railway Gazette*.

I cannot remember having seen any reply from Mr. Roberts to my challenge to say where the "few men with commonsense and enterprise who would be able to capture all the competitive traffic to rail from road" could be found. No doubt the new chairman of the Railway Executive would be delighted to have their names!

Yours faithfully,

J. H. LAUNDY

Rustington, Sussex

High-Speed Tyre Turning

March 21

SIR,—Mr. D. H. Keene, in your March 2 issue, commenting on the editorial note in your February 16 issue, gives a best time of 20 min. for presumably wheels of 37 in.-43 in.—he does not say if new or worn. This is similar to the 24 min. for 56 in. recorded 18 years earlier on page 755 of your issue of December 26, 1913, on due allowance for diameters. It may be recalled that British design, at the earlier date, still largely adhered to the unpractical method of turning outside-journal wheels between centres, and rather half-heartedly offering some support to the tyres as shown on page 272 of your September 12, 1913, issue. The mechanical curry-comb illustrated on page 493 of your April 18, 1913, issue, is interesting, though by no means representative of our progress up to that time as Swindon's Dr. Livingstone had not yet explored Crewe and put it on the map.

The 1914-18 war may have stimulated our endeavours in this field when the latest American types were installed alongside ours of matured vintage; we sent to the war the flower of our youth and our elderly machine-tools. The advertisement picture on page 7 of your Special Transportation Number of September 21, 1920, suggests that the lesson was taken to heart; the maker claims thereunder 56 pairs in 38 working hours, an average of 41 min., but omits the point of new or worn tyres, and the diameter.

Doubtless some simple explanation of the time claimed for the S.P.L. lathe will be forthcoming. I wanted to convince myself that it might be operating on chilled iron wheels because I have long wondered what general effect the advent of perfected carbide-tipped tools might have on the established practice of discarding the former when any disabling defects put them out of service. I imagined that the S.P.L. would not use tyred wagon wheels, as a census, in 1930, showed 95 per cent. of freight wagon wheels in the U.S.A. to be of chilled iron.

It was gathered that A.T. & S.F. was the only railway that used to refit such wheels as would clean up, once, within the limit of full chill thickness. It used a special grinding machine devised by the Norton Company which dealt with a pair at a time when removed from the axle, but I have seen no reference to the practice since 1920.

The question might even be of general interest as lease distributed thousands of vehicles so equipped to many scattered railways. The Nigerian wagon shortage is recalled, when it was said that numbers of wagons were immobilised at a critical time, awaiting replacement of defective chilled wheels by tyred ones, tardy of delivery. Was there a possibility that carbide tools might have provided a palliative?

Yours faithfully,

A. L. JONES

P.O.B. 546, Haifa, Israel

CENTRAL OF BRAZIL RAILWAY.—The Brazilian Government will finance the Central of Brazil Railway to an extent not exceeding 500,000,000 cruzeiros a year and a total of 2,000,000,000 cruzeiros in the five-year period from 1951 to 1955. The financing is to be covered in the yearly federal budgets beginning with the fiscal year 1952 and will be executed through a credit at an annual interest rate of not more than 6 per cent.

THE SCRAP HEAP

Rising to the Occasion

I noted the great exodus from Oxford for the Amateur Cup Final at Wembley between Pegasus and Bishop Auckland. Since they come in for some rough handling, it is pleasing to record that British railways seem to have risen well to the occasion. Western Region purchased a huge block of 2s. tickets from Wembley and have been selling them with rail tickets at Oxford. This seems to have been regarded, not only as a key soccer game, but also a blood match between the road and rail rivals. For once the railways appear to have held their own.—*"Peterborough" in "The Daily Telegraph."*

Fair and Unfair

Anyone in charge of a stand at an exhibition knows how difficult it is to decide whether to let publicity material be taken by the hordes of juveniles who descend like locusts.

The representative of a firm of engineers is fairly safe in keeping his expensive catalogues away from the younger generation, but the travel man is never quite sure that he is not discouraging a potential traveller.

In the British Pavilion at the Antwerp Exhibition of 1930 three of the then existing British railways found themselves allotted stands adjacent to that of a famous Birmingham firm of scale makers. One afternoon two young marauders were seen stealthily approaching, each with a carrier full of literature.

The railway representatives stiffened for action, but the two boys made straight for the scale makers' stand. One boy placed his package on a scale and looked at the dial. "5 kilos," said he to his friend. The other then weighed his package. "5 kilos, 500 grammes," he exclaimed with glee, "I knew I had more than you."

The two boys then walked calmly away, leaving their packages behind them!

Preserving the Talyllyn Railway

Others besides Emmett fans will rejoice that the society which aims at preserving [at Towyn] "the oldest surviving steam-hauled passenger-carrying narrow-gauge railway in the world" has received two locomotives, £1,400 in donations, and many offers of amateur muscular labour . . . [see our February 16 issue].

A dozen volunteers are at work this week-end on the seven-mile track. They have been taking out sections that were held together only by earth, and putting in their place rails acquired from the almost fully dismantled Corris railway. Before last week the stalwarts had had no friendly co-operation from the weather, with the result that regular services cannot begin until June 1.

Obviously the preservation society has much to do. New capital is needed and the society exists to supply it. After that—who knows?—the dream of open coaches and a refreshment room may be attained.—*From "The Times."*

Railways' Good Record

Even if we take the last three years, British Railways have earned £87 million in interest, and have a deficit today of £51 million. In fairness to everyone engaged in the railway industry, Parliament ought to acknowledge that, whereas under the previous accounts the profits were treated as profits, under nationalisation the interest on stock is treated as a cost item. No one can examine the figures which I have given and then say that British Railways are in a bankrupt condition or that the position for the future is hopeless. This industry has a great record. Its engineers, its operators and its personnel compare well with those of other industries in our country. I was glad tonight to note that an increasing number of hon. Members in all parts of the House are beginning to recognise this fact.—*The Minister of Transport during the Railway Freight Charges Increases Debate in the House of Commons on April 23.*

Steak!

Queen Victoria used to choose the station buffet at Dijon for a meal when on her way from Paris to the Riviera by rail. The same restaurant has just been awarded first prize by French railway executives for providing the type of meal which would appeal most to British tourists. The present manager of the buffet, who received the Grand Prix at the Gare de Lyon in Paris, is the grandson of the man who used to greet the visiting Queen when she broke her journey to lunch or dine.—*From "The Evening News."*

Festival Pre-View

They're painting the lamp-posts in Mepham Street,
They're giving the Waterloo Road a treat,
They're cleaning the station, glass and all,
For it won't be long till the Festival.

And Waterloo looks young again
And dazzles arrivals by tube and train;
Such cleansing fervour I can't recall,
For it won't be long till the Festival.

The battle scars no longer show;
In York Road shrubs and flowers grow
And a grass-green carpet covers all,
For it won't be long till the Festival.

The Shot Tower glistens, the Skylon shines,
The passengers on the electric lines
Try to catch a glimpse behind the wall,
For it won't be long till the Festival.

No, it won't be long till the Festival;
Good luck to the workers, one and all,
But, to me, what makes their job complete
Is—painting the lamp-posts in Mepham Street!



"We must be careful not to let our eagerness to possess the best decorated station during Festival Year run away with us . . ."

[Reproduced by permission of the proprietors of "Punch"]

A B

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Melbourne Underground

Various details of a proposed underground railway in Melbourne appeared in our January 10, 1947, issue. The plans have now been referred to the Parliamentary Public Works Committee for investigation and report. The scheme has been approved by the Railway Commissioners as part of a major expansion project affecting Richmond Station and Jolimont Yards, between there and Melbourne, and linking eastern and south-eastern suburban lines with the future underground system. The present station at Richmond has two island and two single-face platforms, accommodating three double tracks.

It is proposed to rebuild Richmond Station slightly nearer Melbourne as a single-storey building with clock tower and five island platforms. At the Melbourne end a second subway will afford access to the Melbourne Cricket Ground. From this end provision will be made for lines to go underground and converge with the underground system which will run under the city towards the present North Melbourne Station.

Ten tracks will serve the new station. There will be four for the Box Hill line, four for the Caulfield line, and two for the Sandringham line. The Box Hill and Caulfield suburban lines carry heavy passenger and goods traffic to districts beyond the suburban area; over the Caulfield line passes all Gippsland traffic, including the heavy, brown-coal trains from Yallourn.

The rebuilding of the Cremorne

Bridge over the River Yarra with provision for extra tracks has now made it possible to complete the quadrupling of the Caulfield line; work is well advanced between South Yarra and Richmond.

PERU

Matarani Branch

A branch connecting the new port of Matarani with La Joya on the Mollendo-Arequipa main line was recently opened in the presence of the Peruvian and Bolivian Ministers of Finance and Public Works & Economy. Port facilities at Matarani are far superior to those at Mollendo, while the rail distance between the Peruvian coast and Bolivia is much shortened by the branch.

ITALY

Further Nord-Milano Electrification

Electric traction was introduced by the end of March on the 31½-mile line between Saronno and Laveno via Varese Nord of the privately-owned Nord-Milano system. The conversion of the Saronno-Laveno section was foreshadowed in our August 15, 1947, issue in an article outlining the electrification scheme.

BELGIUM

Handling of Goods Traffic

Container traffic is in operation between 10 central and 69 secondary depots of the National Railways. In all there are 386 localities served by containers. In smalls traffic, the system of road centres (which consists mainly of collecting at a central point the traffic of a defined region) has been extended. At the end of 1950 road

traffic centres served more than 1,400 localities, and there were still 112 road haulage undertakings remaining to be absorbed. In international traffic the S.N.C.B. has recently introduced a new Belgian Congo direct tariff, applicable to every kind of goods and parcels. This will facilitate traffic between Belgium and the Belgian Congo, as it dispenses almost entirely with formalities and allows of rapid quotation of rates.

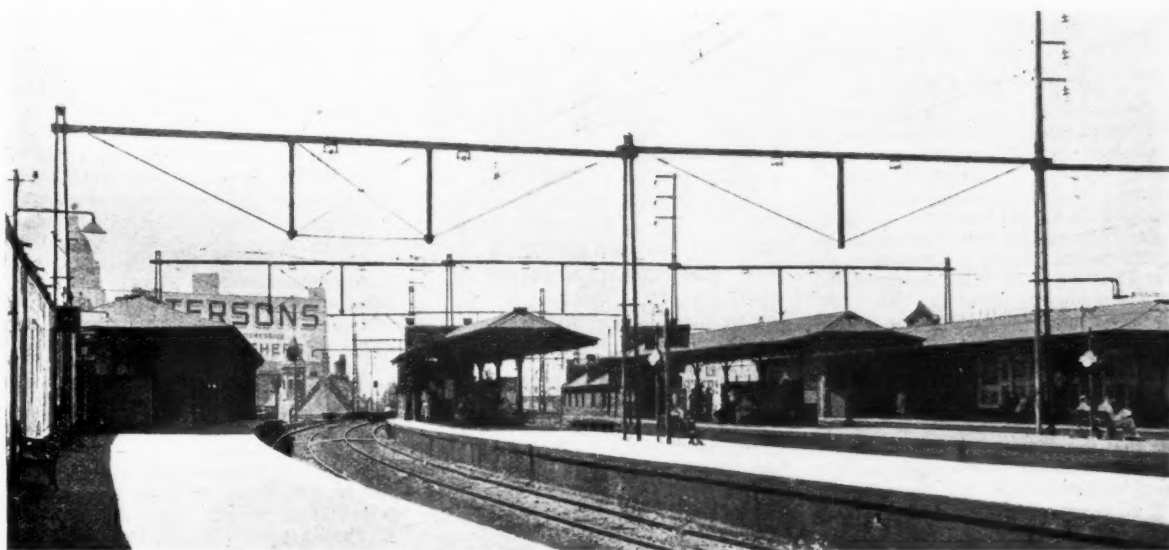
IRELAND

Progress of Coach Replacement

Of the main line coaches under construction at the Inchicore works of C.I.E. twenty-five composites will be in service by the end of June. A hold-up in the delivery of some small fittings is retarding completion of some six of the new third-class coaches. There are 12 third-class coaches in this batch, with 61 ft. 6 in. underframes, but otherwise resembling the 60 ft. composites lately designed.

Another batch comprises seven composites, comparable with the first batch delivered in February, except for 61 ft. 6 in. instead of 60 ft. frames and four first-class and three third-class compartments instead of three first-class and four third-class.

The G.N.R.(I.) works at Dundalk are collaborating in the production of 20 third-class coaches to the C.I.E. design. Delivery of four underframes, bogies and skeleton bodies from Dundalk is expected soon at Inchicore, where the main work will be undertaken. All materials have been supplied by Inchicore, with wheels, brake gear, springs, and other finished parts.



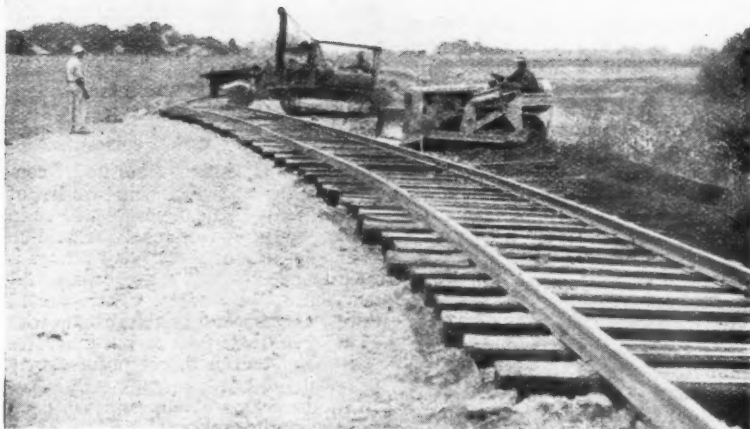
Richmond Station, Victorian Railways, looking east. Left, Box Hill line; centre, Caulfield and Dandenong line; right, Sandringham line

Photo]

[G. Bakewell

Burlington High-Speed Line Across Missouri

The C.B. & Q.R.R. is building by various new methods a new 71-mile cut-off between Brookfield and Kansas City solely for high-speed traffic



Old branch-line track between Forker and Tina Junctions being slewed on one side by a team of bulldozers

ON page 514 of our issue of December 8, 1950, the new chord line which the Chicago, Burlington & Quincy Railroad is building between Brookfield and Kansas City was briefly described. Some 71 miles of the new route are new construction work at present in hand, forming part of a scheme to bring the whole of the route from Chicago to Kansas City up to a standard suitable for 90-m.p.h. passenger and 60-m.p.h. freight traffic. New main-line construction specially undertaken for this purpose is noteworthy, as are several features of the actual work in progress.

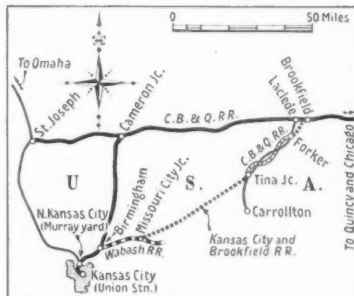
Gradients and Curves

The standard of the new line entails a ruling gradient of 1 in 125, and curves with a radius at 82 ch. or longer; one straight between curves is 16 miles in length. Bridges are designed for Cooper's E.72 loading and embankments have to be consolidated to an unprecedented degree. Embankments over 25 ft. high are being waterproofed from shoulder to shoulder. Throughout the 71 miles there will be no station stops, but six 7,800-ft. crossing loops, each for a train of 140 wagons.

A direct line between these two points is no new scheme; as long ago as 1902 the route was surveyed. It is remarkable that the alignment selected on the basis of the recent photogrammetric survey follows that recommended in 1902 so closely that the two are almost identical, except where curves then introduced to avoid deep cuttings and high banks have now been replaced by a straighter location.

The 22-mile section between Forker and Tina Junctions has been or is being relocated either on or alongside the old Laclede-Carrollton branch-line formation.

To allow the new track to be laid, bulldozers, working in unison, were used to push the old permanent



Map of Brookfield-Kansas City cut-off being built by the Burlington

way to one side in considerable lengths at a time. By this method, up to 3,300 ft. of track has been slewed an average distance of 20 ft. in an eight-hour day. Entirely new formation has been constructed for the remaining 49 miles of the cut-off, namely the initial 6.4 miles from Needles Junction, just west of Brookfield to Forker Junction, and the 42.6 miles from Tina Junction to Missouri City Junction.

The standard of earthwork density adopted for the new embankments resembles that specified for airport con-

struction—at least 95 per cent. compaction at the optimum moisture content. The prevailing sandy clay loam is readily consolidated except when it contains an excess of moisture, and when compaction falls below 95 per cent. work is stopped until the material becomes fully aerated. Where organic silt deposits are encountered, they are rejected as unsuitable for fills. The embankment side slopes are 2 to 1, and the top width varies from 24 ft. for heights up to 15 ft. to 26 ft. for the maximum height of 46 ft.

What is perhaps the most revolutionary practice in constructing railway embankments is their protection on this cut-off from rain seeping into them. All fills over 25 ft. in height are waterproofed from shoulder to shoulder with two applications of penetration asphalt after completion but before ballasting. The top 1½ in. of the earthwork is first scarified and 0.7 gal. of liquid asphalt per sq. yd. is then applied by a pressure distributor. When this has dried out to a tacky consistency, it is lightly rolled with pneumatic-tyred vehicles, and finally another 0.5 gal. per yd. is applied.

Abnormal Width of Cuttings

The cuttings are abnormally wide to allow for off-track maintenance of side drains and slopes. Widths at formation level are 50 ft. in earth and 40 ft. in rock excavation; the corresponding side slopes are 1½ and 1 to 1, respectively. The maximum depth of cut, measured on the centre line, is 95 ft.

Earth cuts are generally made with small shovels and tractors, but large tractor-drawn scrapers are being used for medium-length leads, and high-speed earth-carrying scrapers for longer hauls up to two miles long. In some places 5-cu. yd. draglines and bottom-dump wagons are also in use for earth excavation. In the biggest rock cutting, involving the removal of some 470,000 cu. yd. of material, a 3-cu. yd. shovel and 24-cu. yd. bottom-dump wagons are working.

Precision Blasting

Another unusual refinement is the practice of precision blasting in this cutting, where there are alternating layers of limestone and comparatively soft shale. By the use of exactly-sited bore holes and millisecond delays, the side cuts are blasted so accurately as to require practically no other work to give a true ½-to-1 slope.

This result is achieved by firing from 400 to 600 shots at a time in four delays of 0, 50, 100, and 150 millisecond. All shots are fired simultaneously except those in three lines along the side of the cut. In the latter, the delay in the third line from the outside of the cut is 50

millisec., in the second line there is a 100-millisec. delay, and in the extreme outside line the delay is 150 millisec., so as to control the overbreak. Across the width of the cut at the forward end of the blasting area the same firing pattern is used to minimise backbreak. Rock and shale are blasted with 40 per cent. and 20 per cent. strength powder, respectively. The shots are fired by a 450-V. current supplied by a special generator. The cut is worked from end to end, a complete layer of shale being removed before work starts on the next underlying layer of rock.

Novel Method of Pile Driving

A further innovation on this construction is the method used for pile-driving on long timber trestle viaducts, which has greatly speeded up the work. Start-



Pneumatic-tyre crane with special leads, bracing, and outriggers—working on temporary runway of girders laid flat—to drive trestle piles

ing at one end of each viaduct, the contractor drove the piles for the bents, added the cross-bracings, and completed the decking, span by span, as he went along from one end to the other. This



The biggest cutting, from which 470,000 cu. yd. of rock were removed; note the 40-ft. width at formation

was carried out with the aid of a six-wheel pneumatic-tyred crane fitted with a special set of 40-ft. leads for handling piles up to 65 ft. long.

As each span was completed, the crane moved along on a temporary runway consisting of pairs of short plate girders laid flat on the span decking, with wooden packings between their webs and the timber deck. There were three pairs of these 14-ft. girders—the length of the viaduct spans—bolted together in tandem. Before each forward move of 14 ft., the crane picked up the rear pair of girders, swung it round through 180 deg., and placed it ready for bolting on to the front of the former leading pair.

When the crane had moved forward to its new position, its tyres were wedged against the flanges of the girders, and the rear part of it was held down to a pile-bent. To ensure that it would not overbalance under maximum load, it was fitted with special outriggers of sufficient length to enable the crane to stand directly over the last bent driven. The leads were held in correct position by a frame composed of piping,

hinged to the front of the crane frame; a vertical-arc guide, or moonbeam, at the front end of the pipe-frame enabled piles to be driven on a batter. The double-acting pile hammer was supplied with steam from a stationary boiler beneath the viaduct.

In each six-pile bent the two centre piles are vertical, the two outside ones have a batter of 2 in. per ft., and the intermediate pair 1 in. per ft. To permit the longer piles to clear the hammer at the start of driving to a 40-ton resistance, shallow holes to receive them were made in the ground with pneumatic plant. In the manner described above, the average progress maintained was two bents and spans completed in an eight-hour day.

The whole of this construction work is being carried out under the direct supervision of Mr. H. A. Aalberg, Assistant Chief Engineer, C.B. & Q.R.R., reporting to Mr. H. R. Clarke, the Chief Engineer, according to our American contemporary *Engineering News-Record*, to which we are indebted for the foregoing information and for the illustrations reproduced.

SCOTTISH REGION CUP SPECIALS:—On April 21, twenty special trains were run in connection with the Scottish Cup Final between Celtic and Motherwell at Hampden Park.

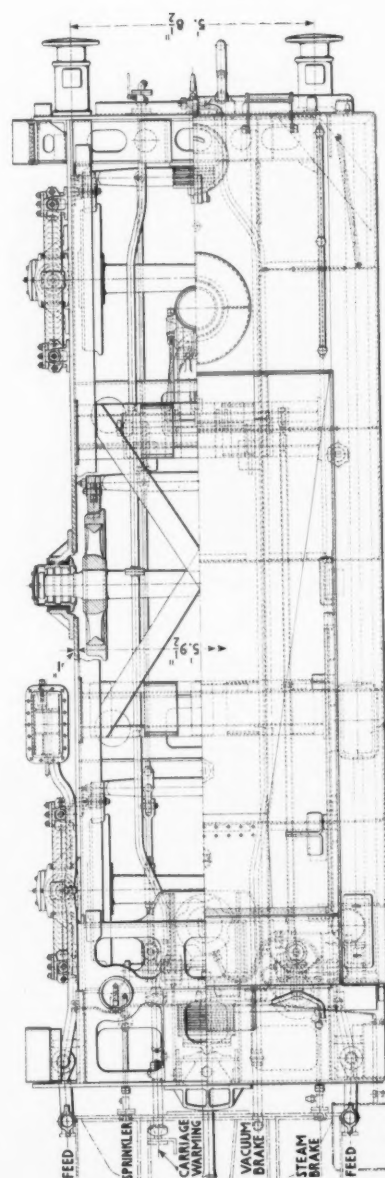
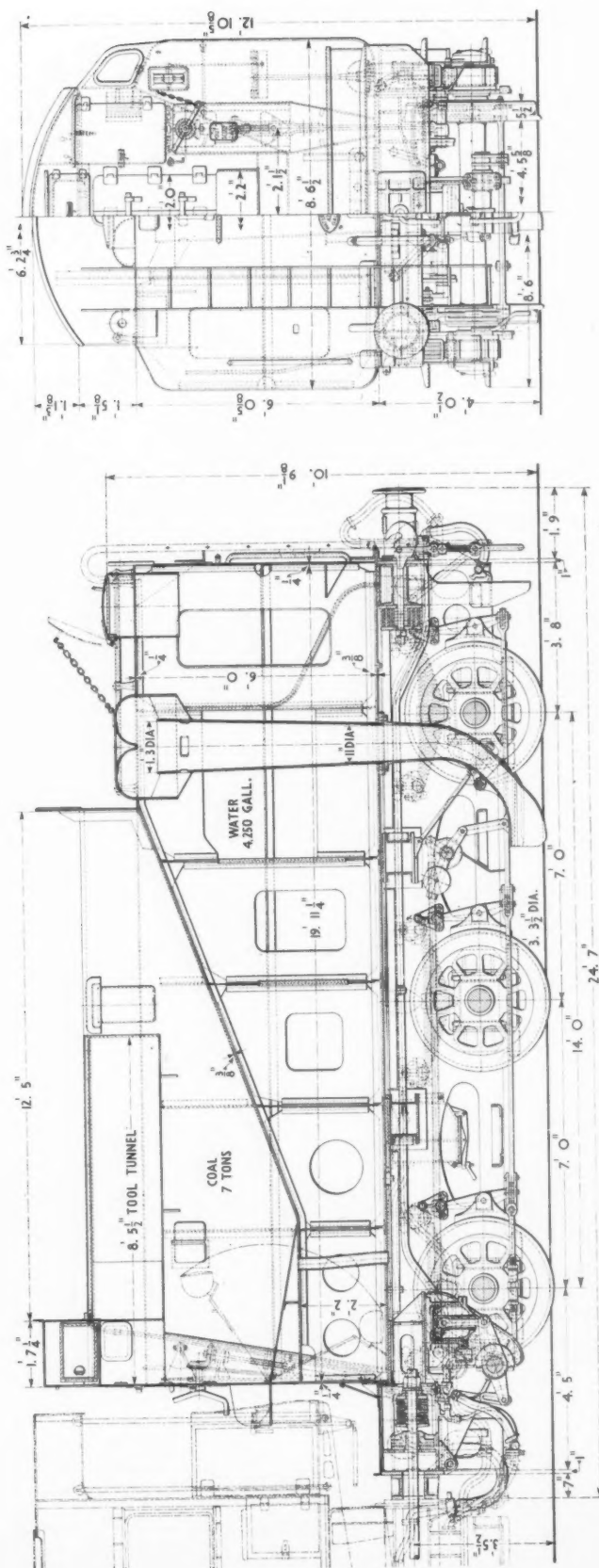
SCOTTISH REGION WOMEN'S AMBULANCE COMPETITION:—On March 30 six teams took part in the British Railways (Scottish Region) Women's Ambulance Competition in Glasgow. This was the first competition for Scottish railwaywomen, and the Silver Rose Bowl was won by Glasgow (Women's) Section "A" with 181 points. Mr. T. F. Cameron, Chief Regional

Officer, presided, and Mrs. Cameron presented the cup and prizes. By this success the winning team will represent Scotland at the Inter-Regional Ambulance Competition in London on May 18 and will also take part in the International Competition to be held in Glasgow on September 26.

EUROPEAN ROAD NETWORK PLANNED:—Six more States have informed E.C.E. of their intention to sign the United Nations declaration on international roads. This has already been signed by the United Kingdom, France, Holland, Belgium, and Luxembourg and the new signatories are

Austria, Italy, Norway, Switzerland, Turkey, and Yugoslavia. In the declaration countries record their intention to construct or reconstruct roads within their territory to correspond with the standards laid down by E.C.E. for main international traffic. The network planned or constructed covers about 33,600 miles in 21 countries. It has also been decided to prepare a draft text for an international convention for road, commercial, passenger, and goods vehicles, under which local licences and vehicle taxes would be valid in the signatory countries, thus eliminating further payment for licences and taxes.

British Railways Standard Locomotive Tender



Sectional elevation and plan, and half and elevations of tender fitted to British Railways standard Class "7" 4-6-2 locomotive (see editorial article on page 460, and illustrations on page 474)

British Modern Lightweight Coaches for Indian Railways—1

General design of some new electric stock being built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for India

THE Metropolitan-Cammell Carriage & Wagon Co. Ltd., of Saltley, Birmingham, is building driving motor coaches for multiple-unit electric rolling stock for use on the suburban routes of the Great Indian Peninsula Railway and the Bombay, Baroda & Central India Railway. Messrs. Rendel, Palmer & Tritton are the consulting engineers for the mechanical equipment, and Messrs. Merz & McLellan for electric equipment which is designed and supplied by the English Electric Co. Ltd., and the British Thomson-Houston Co. Ltd.

A total number of 28 units will be supplied, each of four coaches; two trailer coaches (being built by the Birmingham Railway Carriage & Wagon Co. Ltd.), and two driving motor

coaches; the latter are positioned at the ends of each unit. The four-coach units are designed to operate as complete trains or coupled to make up eight or twelve-coach trains for use during rush hours.

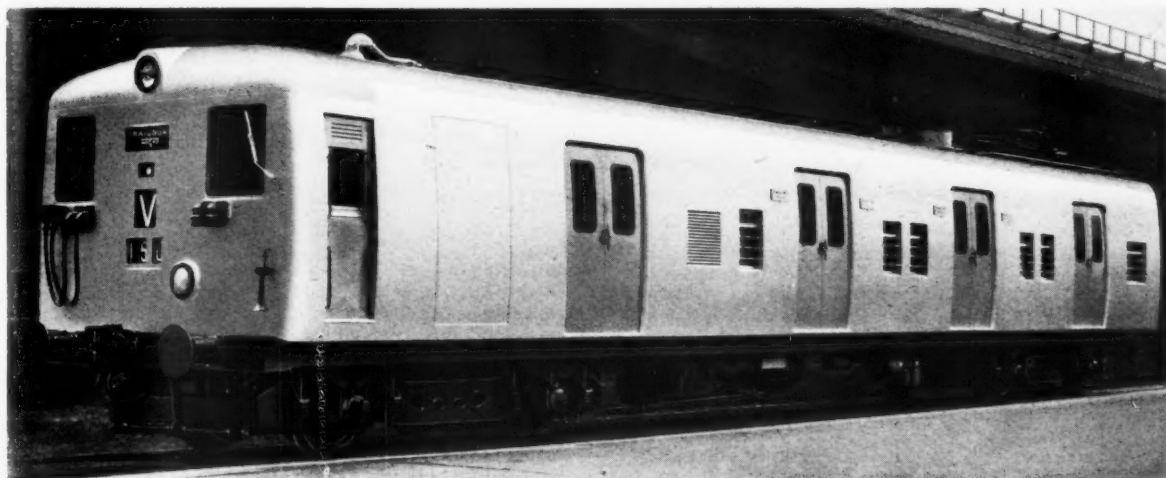
Saving in Weight

The design incorporates a number of interesting features resulting from previous experience gained in designing for the Indian Government Railways, and the inclusion of modern developments in railway practice. Particular attention has been paid to weight saving, and the design of a structure which will act as a unit, each part taking its full share of the loads.

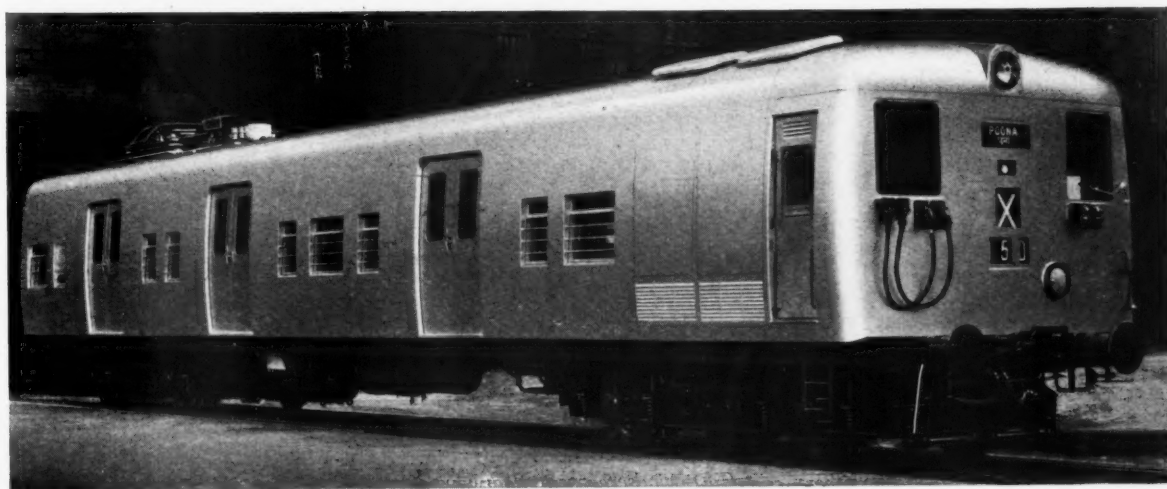
As an example of what has been

achieved in this direction, the driving motor coaches now weigh approximately 51·8 tons complete on rails, a saving of over 18·3 tons or 26 per cent. on previous designs used by these railways.

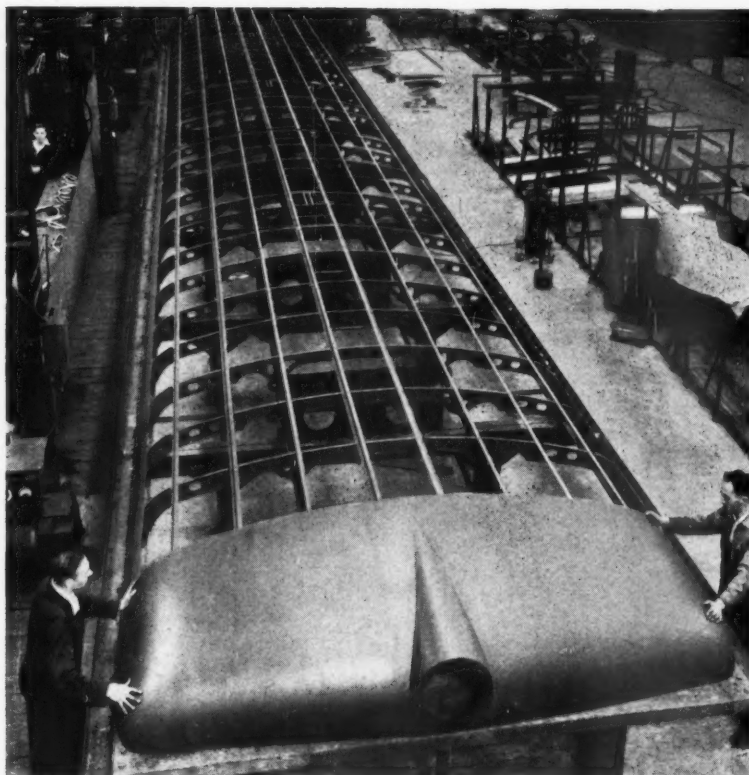
Easy access to the coaches is by double sliding doors; there are six along the bodysides of the driving cars and eight on trailer cars. The doors are at present manually operated by the passengers, although provision has been made for fitting power-operated doors if required. The interior is of the open saloon type fitted with transverse seats and wide gangways which are capable of accommodating large numbers of standing passengers at times of peak loading.



Third class motor coach, Type A



Third class motor coach, Type D



Roof structure in assembly jig, before riveting roof sheets in position, showing continuity of all longitudinal members

General particulars of the coaches are as follow:—

Length over body	68 ft.
Width over body	12 ft.
Height, rail to top of roof (tare condition)	12 ft. 6 in.
Height, rail to top of floor (tare condition)	3 ft. 10½ in.
Rail gauge	5 ft. 6 in.
Distance between bogie centres	48 ft.
Bogie wheelbase	10 ft.
Wheel dia.	3 ft.
Approx. tare weights—	
Driving motor coach	51.8 tons
Trailer coach	31 tons
Motors per motor bogie	2
Average line voltage	1,400 d.c.
Normal maximum running speed	65 m.p.h.
Tare weight per seated passenger (1 unit)	920 lb.
Tare weight per passenger (standing, normal load)	493 lb.
Seated passengers in one unit	415
Passengers in normal crush condition	772
Radius of minimum curve	573 ft.
Maximum gradient	1 in 34

Pick up is by one pneumatically-operated pantograph per driving motor coach.

Because of heavy rainfall during the monsoon periods, the coaches are designed to run at a speed of 5 m.p.h. through flood water 8 in. above rail level, and the traction gear is waterproof to a height of 30 in. above rails.

General Construction

A very clean appearance has been obtained in the interior by the use of plastics and smooth finishes to facilitate washing out, and externally by welded steel body panels free from rivet heads, commode handles and gutters.

With the exception of key members, such as cantrails, almost the whole of

the body structure is constructed of steel sheet pressed or rolled to form, the more highly loaded parts being of high-tensile steel. This type of build-up is the most effective in steel as relatively light gauges of material can be used and each member made to the most suitable profile.

The roof is an interesting part of the

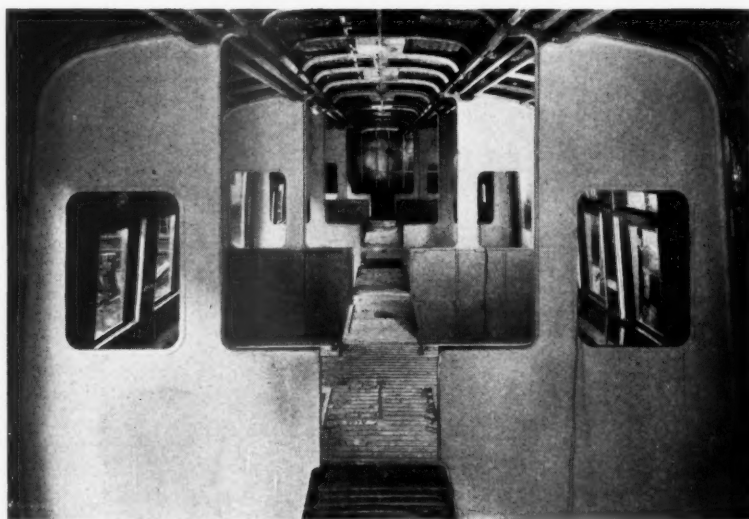
structure, embracing as it does a number of novel features representing a departure from traditional design. The roof component is approximately 2 ft. deep, 11 ft. 4 in. wide and 68 ft. long. A general view of the structure is illustrated.

Roof Construction

The roof sheets are attached to the main longitudinal members along their entire length, thus assuring the maximum support in this most important direction, and the carlines stiffen the sheet in the transverse direction. To make possible this support in both directions, the carlines have been made in three parts, pressed from 14 s.w.g. mild steel; one section just over 4 ft. long spanning the centre roof between monitor rails, and two side pressings between monitors and cantrails. This allows full advantage to be taken of the roof depth to provide a continuous monitor rail in H.T. steel of "ZED" section 7 in. deep, while small pockets in the carlines permit the purlins to run unobstructed from end to end of the roof. In a good design as many of the longitudinal members as possible should be allowed to run continuously for the full length of the coach, to obtain the required stiffness under vertical loads, and in the event of a collision to bring into play the whole of the structure. If the energy is to be absorbed with the least damage to coach and passengers, the maximum amount of structure must be used to meet it.

The central roof sheets are of aluminium-magnesium alloy having high corrosion resistance, to B.S.S. 1470, N.S. 5, ¼ hard; these are riveted to the high-tensile steel members by ¼ in. hot steel rivets. The sheets and members are insulated against inter-crystalline corrosion before assembly by the use of zinc chromate paint.

Along the lower edge of the roof there



Cast windscreens at doorways effectively tie roof, sides and floor together and ensure distribution of passenger loads to all parts of the structure

is a $\frac{1}{4}$ in. mild-steel plate which follows the roof profile for approximately 10 in. enabling the bodysides and roof to be joined by a flush seam weld, giving both a smooth finish and continuing the sweep of the bodyside above cant-rails. It also provides an effective part of the upper bodyside beam, capable of withstanding quite considerable compressive loads. It is interesting to note that the central part of the roof sheet has been found by test to contribute very little to the effective stiffness of the coach, as it reaches its buckling stress at very small loads, and for this reason it was deemed expedient to neglect the aluminium roof sheets in the stress calculations which are dealt with more fully in a later section.

At each doorway large Alpac castings form windscreens which run between roof and floor structure, providing effective ties under certain load conditions, thus assisting in distributing the loads to all parts of the structure, as shown in the illustration.

Insulation

Full use has been made of the roof depth to house conduits, fluorescent light fittings and insulating materials, at the same time leaving sufficient space for air circulation. Heat insulation is effected by using five-ply Isoflex, held in wire mesh against the outer skin. This material is also used for the insulation of the bodysides as it has high thermal efficiency commensurate with its weight, is unaffected by moisture, vibration or vermin, and is chemically inert when placed against the structure.

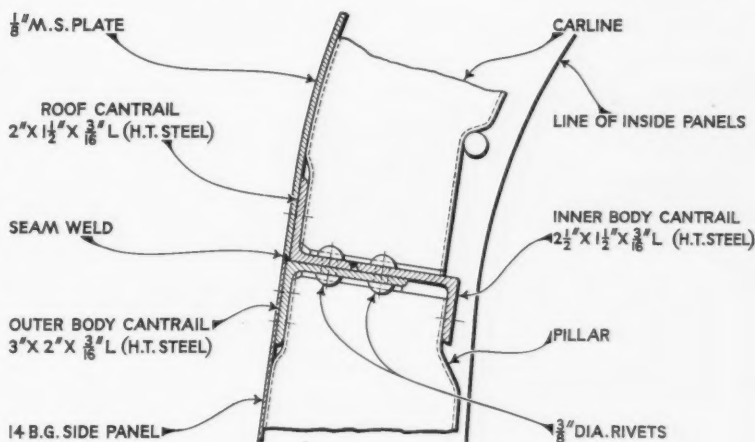


Fig. 1—Cantrail joint between roof and bodyside structures

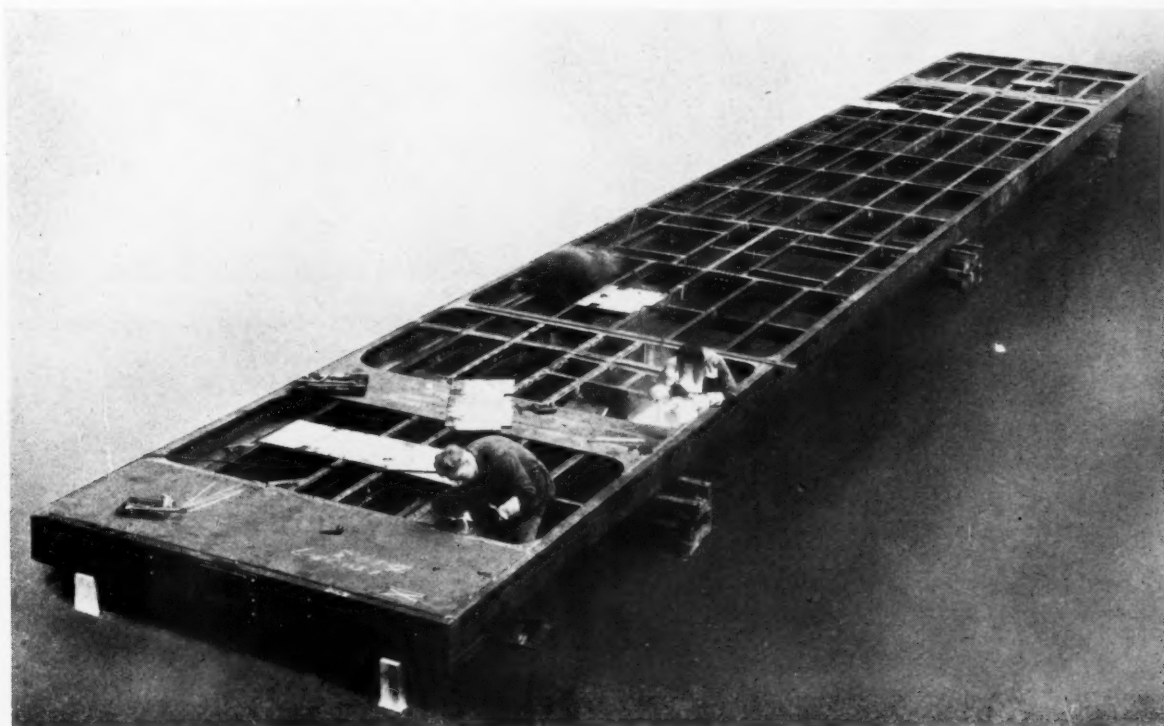
The basic structure is formed by pressed $\frac{3}{8}$ in. steel framing members of channel section to which are riveted 14 s.w.g. mild-steel body panels. The fixing of the panels to members is by $\frac{1}{4}$ in. steel rivets countersunk on the outer surface to conform with the desired smooth skin; the panel edges are seam welded. When assembled all surfaces are zinc sprayed as a protection against corrosion.

The cantrail assembly provides the key for location of roof on bodysides before final assembly, and, as will be seen from Fig. 1, is composed of three high-tensile steel angle sections. Two of these angles are assembled on

the bodyside structure; the remaining one is located along the lower edge of the roof. When the two components are finally assembled the joint is riveted and welded, forming a strong beam from end to end of the coach.

Along the lower edge of the bodyside, attachment to the floor structure is by a cantilever plate extending approximately 9 in. beyond the solebars to which the pillars are fixed by riveting to a crib rail and welding to a foot, which in turn is riveted to the cantilever plate.

This overhang of the bodysides beyond the solebars is necessitated by the loading gauge, which ensures clear-



The construction of the floor structure. There is no truss used on this design and the solebars are unbroken

ance of this part at stations when the bodyside will be oversailing platforms. Stiffening brackets effectively support and connect the cantilever plate to the floor structure, ensuring that the two components are truly united.

Condensation and the drainage of water so formed becomes a major problem on steel cars operating in climates such as are met with in India where shade temperatures may be 115° F. and humidity 100 per cent. followed by rapid cooling. Thus free circulation of air and ample drainage become very important. This is arranged on the coaches by leaving the lower edges of body panels unattached between pillars with a $\frac{1}{2}$ in. gap between panels and cantilever plate, thus avoiding any possibility of moisture collecting and corroding the steel.

Floor Structure

Generally the floor structure is of sturdier construction than the roof or bodysides, because it must first receive and then transmit the vertical and horizontal loads due to the passengers and buffing conditions to the rest of the coach. The members must also be capable of carrying heavy concentrated loads caused by the support of heavy electrical and mechanical equipment, certain parts of which generate gyroscopic torque of considerable magnitude.

The structure is formed from rolled steel sections and pressings welded to form an integral unit. The solebars are of 10 in. \times $3\frac{1}{2}$ in. channel section and run uninterrupted for the full length of the car; the other longitudinal members are of smaller sections, broken at certain points where they are welded to important transverse members. The bolsters are members in which stiffness is of paramount importance, as they are required to transmit the large vertical loads between body and bogie with only small deflections. They are of box section, 17 in. deep at the centre, fabricated from $\frac{3}{8}$ in. high-tensile steel plate and well gusseted into the solebars. All fabricated parts are stress relieved after welding.

The coach is designed to withstand a 100 ton buffing load superimposed on the crush passenger weight. To cater for this high horizontal loading, the M.C.B. type couplers and Spencer-Moulton rubber springs are mounted in a fabricated structure at the floor structure extremities designed to distribute the load across the full width of the coaches in the shortest distance.

The floor is formed by a 16 s.w.g. aluminium alloy corrugated sheet attached by a supporting member of ZED section to the solebars. A layer of cork is then bedded into the corrugated sheeting with a bitumastic compound, and the whole covered by a dark maroon coloured Ferrobestos floor sheet held by $\frac{1}{2}$ in. tubular rivets.

The underframe truss as used on earlier cars has been dispensed with; this is a tendency which is finding favour as railways gain confidence in forms of construction resulting in an improved appearance of the coach side.

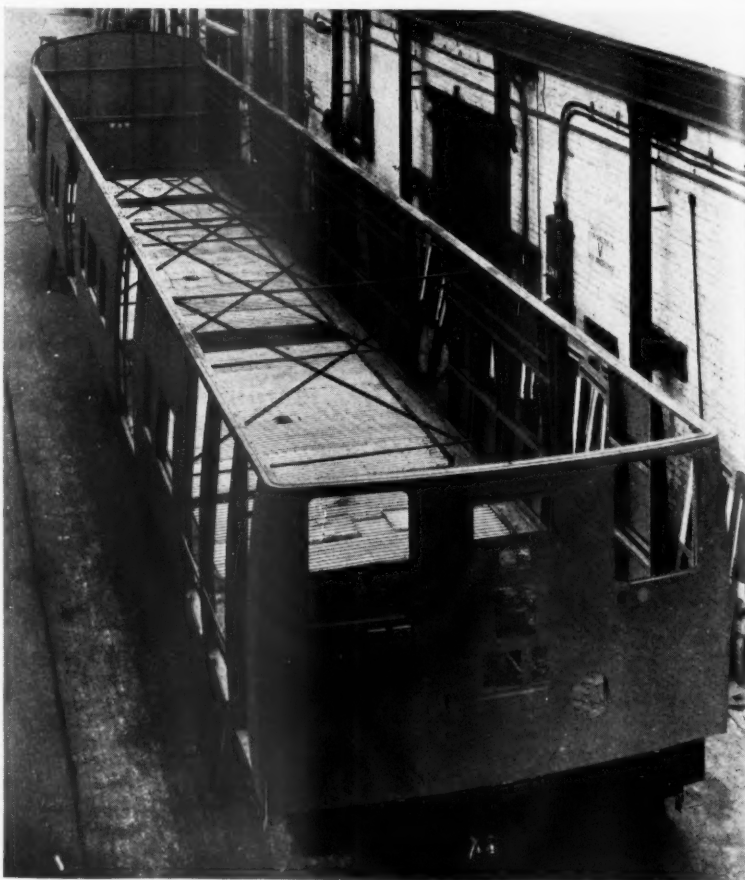
As the four coach units may have to operate as complete trains or be coupled, side buffers and centre couplers are provided at the outer ends of the train units.

Body Ends

The body ends are of the closed type, with no communicating corridor between coaches. Light vertical pillars are provided between corner pillars, with local horizontal skin stiffeners of channel section. The skin is riveted to

louvre frames. Both the louvres and lights are of the lifting type with spring-loaded steel tapes mounted in the upper bodyside to balance the weight.

The interior finish has been designed with a view to providing a neat and colourful appearance bearing in mind that any scheme must at the same time be essentially practical. The coaches will have to withstand severe service conditions necessitating their being washed out daily without the water having a deleterious effect on the



The shell of a motor driving coach before assembly of roof structure

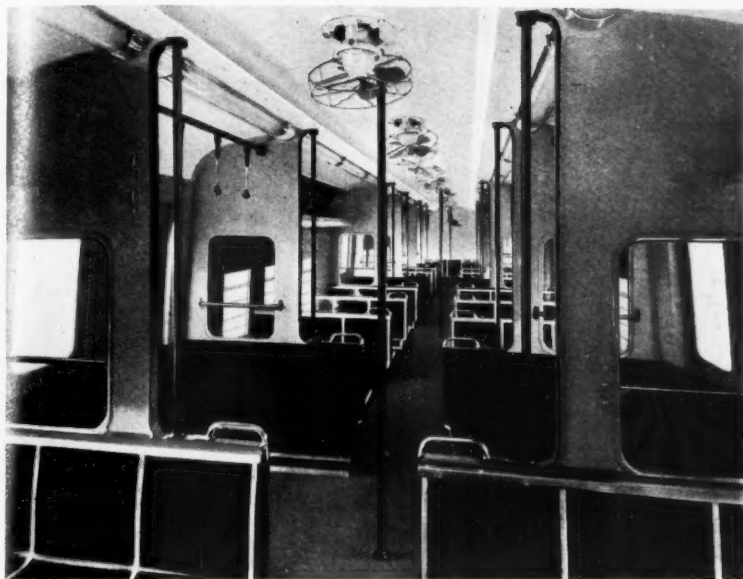
the framing and seams are welded, continuing the clean finish obtained on bodysides. This light construction is possible because the coaches are close coupled by the M.C.B. type couplers, which are considered to be the safest form of connection in the event of collision. Shock loads are distributed direct from the floor structure to the bodyside and roof structure, obviating the need for anti-collision ends.

Fittings and Furnishing

In structure of secondary importance, use has been made of castings from Alpax for both weight saving and ease of assembly. Examples of the use of this alloy are to be found in the sliding doors, saloon windscreens and lifting

materials used. In addition, furnishings must as far as possible be fireproof, rot-proof and vermin-proof, which has resulted in recourse being made in a number of instances to the use of plastics. Timber is reduced to a minimum.

Of interest is the design of the transverse seats in the lower class compartments which are framed with aluminium alloy extrusions and braced to the bodyside. The covering is of dark maroon laminated plasticised fabric to match the lower walls, and is assembled in approximately 17 in. widths, which can be removed quickly for cleaning or replacement. The aluminium finish is a natural-tone anodised surface, which provides a pleasing contrast with the maroon seats.



General view of interior

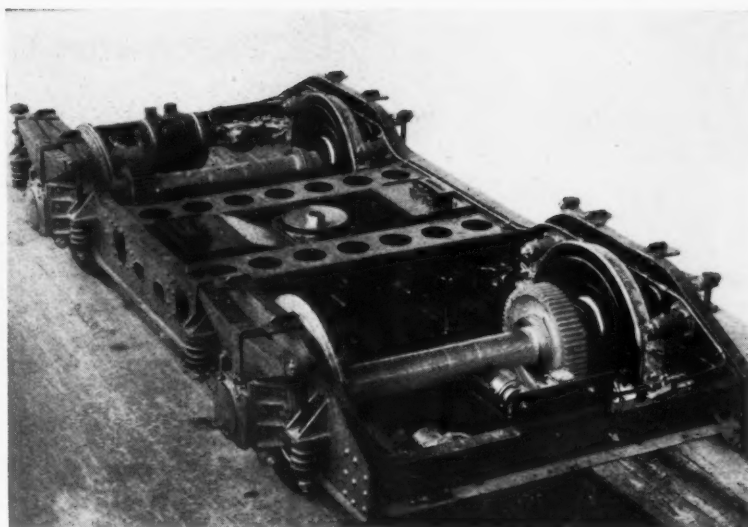
Lighting in the passenger compartments is by fluorescent tubes of $1\frac{1}{2}$ in. dia., 4 ft. long, using a pressure of 120V. and housed in two rows of translucent reeded Perspex shades running along the length of the car. Rotary fans are provided along the centre roof at approximately 5 ft. intervals. This equipment is being supplied by J. Stone & Co. Ltd.

Longitudinal parcel racks are an integral part of the interior finish; the under surface is a continuation of the upper wall profile. The interior roof sheet is made from 18 s.w.g. aluminium and is painted a matted off-white with upper walls of 16 s.w.g. aluminium finished in pale blue.

The Bogies

The motor bogies are of the four-wheel type of composite welded and riveted construction popular in India.

The motor bogies are powered by two motors (one to each axle). These are supplied by the English Electric Co. Ltd., for the G.I.P.R., and by British Thomson-Houston Co. Ltd., for the B.B.



A motor bogie structurally complete, but without driving motors. The motors are nose suspended and the main support bracket is shown on the near transom

& C.I.R. Nose suspension is used for these motors and the weight is taken by transoms built up from $\frac{1}{2}$ in. plate into a box section. The transoms clearly visible in the illustration connect with the soleplates which are approximately 17 ft. long and 2 ft. deep fabricated from $\frac{3}{8}$ in. plate.

Vertical loads on the bogie bolster are transmitted via four nests of helical springs (two per side) to the diverging swing links, and thence to transoms and soleplates. The bogie-frame suspension consists of four laminated springs, each with two auxiliary helical springs. Provision has been made for fitting hydraulic shock absorbers to the vertical suspension if desirable.

The brake equipment is of the Westinghouse electro-pneumatic type with individual cylinders to each brake block capable of giving a maximum deceleration rate of 3 m.p.h. per sec., and providing almost instantaneous application of brakes throughout the length of train, ensuring a smooth progressive deceleration.

(To be continued)

METAL WORK AT THE B.I.F.—The firm of G. A. Harvey & Co. (London) Ltd. will again be represented at the B.I.F. At Birmingham the firm will be showing a wide range of heavier products, including heavy constructional work and perforated metals, woven wire, wire work, sheet metal work, and steel plate work, while at Olympia exhibits will include a complete range of Harco steel equipment for offices, covering modern methods of storekeeping and filing.

IRON AND STEEL SCRAP PRICES.—The Minister of Supply has made a new Order increasing the controlled maximum delivered prices of iron and steel scrap as from April 21. The Order, which reflects the recent increases in transport costs, is the Iron & Steel Scrap (No. 2) Order, 1951, Statutory Instrument 1951, No. 678. Increases vary according to dis-

trict and specifications from 2s. 11d. to 5s. 11d. a ton. Copies may be obtained from H.M. Stationery Office, Kingsway, W.C.2, or through any bookseller.

DISPLAY OF SAFRAN PUMPS.—Examples of the three basic types of Safran centrifugal pumps are being shown by the Saunders Valve Co. Ltd. at the B.I.F. Bedplate pumps will be represented by a direct-coupled electric set.

SCOTTISH REGION FESTIVAL SPECIALS.—The Scottish Region of British Railways has so far made arrangements for special trains to carry over 40 organised parties, totalling nearly 5,000 passengers, to London for the Festival of Britain. The parties originate from many districts of Scotland, and during the early weeks of the Festival ten

direct specials are being run to London with parties and organisations from Stevenston, St. Andrews, Edinburgh, Johnstone, Dumfries, Brechin, and Auchlinleck.

MORGANITE ENGINEERING COMPONENTS.—The stand of the Morgan Crucible Co. Ltd., at the B.I.F., will once again display many products of interest to engineers and foundrymen as well as furnace designers. Limitation of space will permit the showing of only a small part of the wide range of articles and materials manufactured by the company or its associates. A wide range of anti-friction engineering parts made from Morganite materials will be included among the exhibits which will demonstrate the wide variety of applications of Morganite to the engineering industry. Another exhibit will be a small crucible gas-fired furnace.

British Railways Standard Locomotive in Service



The "Britannia" ascending Brentwood Bank while hauling the "Broadsman" to Ipswich and Norwich



The 10 a.m. "Norfolkman" leaving Liverpool Street Station

RAILWAY NEWS SECTION

PERSONAL

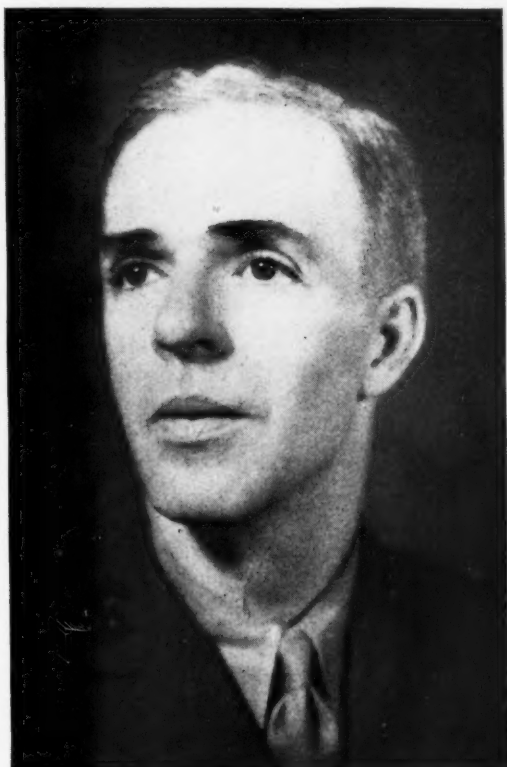
PRESENTATION TO SIR EUSTACE MISSENDEN

Sir Eustace Missenden, who retired in January from the position of Chairman, Railway Executive, received on April 19 from Mr. V. M. Barrington-Ward, Member, Railway Executive, an inscribed silver silver presented to him by Members of the Executive and Chief Regional Officers of British Railways.

Mr. O. M. Watson, Chief Traffic Manager, Western Australian Government Railways, has retired and has been succeeded by Mr. John Ridley, previously Assistant Chief Traffic Manager.

Among those who left Southampton for New York on April 19 in the *Mauretania*, was Mr. H. I. Crook, Assistant Carriage & Wagon Engineer, Western Region, British Railways.

Mr. J. L. Harrington, M.Inst.T., Chief Officer (Administration), Railway Executive, who, as recorded in our April 20 issue, has been appointed Chief Officer (Marine & Administration), was educated at University College School, Hampstead. He joined the Southern Railway at Balham in 1924 and transferred to the Chief Operating Superintendent's Office in 1925. Appointed a cadet in 1928, he had experience in the principal departments and also with



Mr. P. G. C. Peyton

Appointed Chief Mechanical Engineer,
Oudh Tirhut Railway



Mr. J. L. Harrington

Appointed Chief Officer (Marine & Administration),
Railway Executive

Mr. P. G. C. Peyton, M.I.Loco.E., formerly Deputy Chief Mechanical Engineer (Works), South Indian Railway, who has been appointed Chief Mechanical Engineer, Oudh Tirhut Railway, served a pupilage with the L.M.S.R. and one of its constituents from 1918 to 1924. He joined the South Indian Railway as Assistant Mechanical Engineer in 1924 and two years later was appointed District Mechanical Engineer. In 1941 he joined the Royal Indian Engineers rising to the rank of Lt.-Colonel and becoming Assistant Director of Transportation Directorate, Baghdad, in charge of Railway Mechanical Engineering. Mr. Peyton returned to duty with the South Indian Railway in 1944 and was promoted to be Deputy Chief Mechanical Engineer (Power) the following year. Since his appointment as Deputy Chief Mechanical Engineer (Works), at Golden Rock, in 1946, Mr. Peyton has acted as Chief Mechanical Engineer, South Indian Railway, from August to October, 1947, and between February and November, 1948.

Mr. F. E. Jones, Assistant to the Irish Traffic Manager, British Railways, has retired and has been succeeded by Mr. J. J. Brangan.

J. A. Kay Memorial at Longmoor

The memorial plaque to the late J. A. Kay, Editor of *The Railway Gazette* from 1910-49, subscribed by ex-Commandants at Longmoor, by readers of *The Railway Gazette*, and others, will be dedicated in Longmoor Garrison Church by the Assistant Chaplain General, Southern Command, on Sunday, May 27, during a service commencing at 11 a.m. Mr. George Rollason, Deputy Chairman & Managing Director of Tothill Press Limited, who was closely associated with Mr. Kay for 40 years, will unveil the memorial.

Anyone wishing to attend the service should write direct to the Commandant, H.Q. Transportation Centre, R.E., Longmoor Camp, Liss, Hants., not later than May 18 so that seating in the church can be arranged.

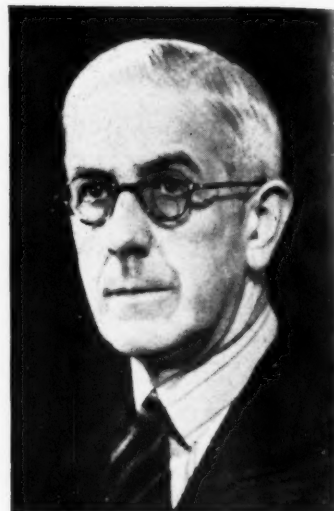
the London Underground Railways. In 1931, Mr. Harrington was appointed Assistant to London (Central) Divisional Superintendent and, in 1934, Assistant to Traffic Manager; he was a member of the Standing Joint Committee of Railway Air Services, 1937-38. He became Divisional Marine Manager, Dover/Folkestone, in 1938, and General Assistant to General Manager in 1941, leading the S.R. delegation to study practices in the U.S.A. and Canada in 1946. On nationalisation, he was appointed Chief Officer (Administration) at Railway Executive headquarters, his duties including membership of the London Plan Working Party and Railway Electrification Committee, the reports of which have been published. Mr. Harrington holds the Graduate Silver Medal of the Institute of Transport, the Brunel Silver Medal of the London School of Economics and, in 1939, was made Officier du Merite Maritime of France. He is a Major in the Engineer & Railway Staff Corps, R.E. (T.A.).

**Mr. E. Dalton**

Appointed District Traffic Superintendent,
Nigerian Railway

**Captain J. D. Reed**

Appointed Executive Officer (Marine),
Railway Executive

**The late Mr. A. McIntosh**

District Engineer, Inverness, L.M.S.R.,
and Scottish Region, 1941-51

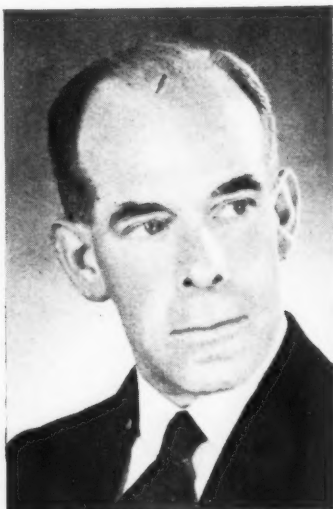
Mr. E. Dalton, Head of Traffic Section, Chief Regional Office, York, North Eastern Region, who, as recorded in our April 20 issue, has been appointed District Traffic Superintendent, Nigerian Railway, under the scheme for seconding British railway officers to assist Colonial railways, joined the L.N.E.R. as a junior clerk at Cherry Burton Station in 1925. After experience at several stations in the Hull and York districts, he was transferred to the Hull & Netherlands Steamship Company. In 1934 he passed the L.N.E.R. traffic apprenticeship examination, and on completion of his training period in the Scottish Area was appointed Chief Passenger Trains Clerk, Glasgow District. During the war Mr. Dalton served with No. 3 Docks Group, Royal Engineers, in France and Egypt; he was mentioned in despatches, awarded the M.B.E., and demobilised in 1945 with the rank of Major. He returned to the L.N.E.R. and after a period as East

Coast Trains Inspector joined the Chief Regional Officer's staff at York.

Captain J. D. Reed, Assoc.I.N.A., Assistant Chief Officer (Marine), Railway Executive, who, as recorded in our April 20 issue, has been appointed Executive Officer (Marine), commenced his sea career as an apprentice in the *Windsor Hall* in 1914, serving eventually in a supply ship attached to the South Atlantic fleet and later on board a military transport attached to the Balkan forces. He passed all his marine examinations at the age of 24 and from 1924-30 was Master of Merchant Service ships operating on the Continent/Brazilian/Argentine trade. He relinquished command of ocean-going ships to sit for the Board of Trade Nautical Surveyors examination, passing fifth in the United Kingdom, and later joined the former Great Western Railway cross-channel mail vessels before being appointed ashore at the G.W.R.

South Wales ports shortly afterwards. In 1935 he was appointed in charge of Fishguard Harbour and the cross-channel services operating from that port. During the 1939-45 war, all the G.W.R. cross-channel vessels were based on Fishguard under his charge, some serving as hospital ships and others as troopships. Captain Reed also served as Chairman of the Port Emergency Committee in the Fishguard area. In 1945 he was appointed Marine Superintendent at the former G.W.R. Marine Headquarters. Shortly after nationalisation of the railways, he became Assistant Chief Officer (Marine) at the Railway Executive. Captain Reed holds an Extra Master's Certificate.

Mr. Archibald McIntosh, District Engineer, Inverness, British Railways, Scottish Region, whose death we recorded last week, entered the service of the Caledonian Railway in 1912 at Glasgow. He served with

**Mr. J. Powell**

Appointed District Goods Superintendent,
Paddington, Western Region,
British Railways

**Mr. A. Lane**

Chief of Police, South Western Area,
British Transport Commission
who has retired

**Mr. W. W. Wood**

Appointed Chief of Police, South Western
Area, British Transport
Commission

the Royal Engineers (Mining Corps) during the 1914-18 war and after demobilisation in 1919, with the rank of Captain, he returned to the railway service. In 1930 he was transferred to the Divisional Engineer's Office (Maintenance Section) and in 1936 was appointed Assistant (Maintenance) in the Office of the Engineer, Scotland, L.M.S.R.; he became District Engineer, Inverness, in 1941. Mr. McIntosh was cremated and the ashes interred at Tomnahurich Cemetery, Inverness. The funeral service took place at Mr. McIntosh's home, 43, Old Edinburgh Road, Inverness, on April 9, and in addition to the family mourners, the following Scottish Region Officers and Officials attended, or were represented:—

Messrs. W. Y. Sandeman, Civil Engineer; I. R. Frazer, Assistant Civil Engineer (also representing Mr. T. F. Cameron, Chief Regional Officer); A. Yeaman, District Traffic Superintendent, Inverness (also representing Mr. T. H. Moffat, Deputy Chief Regional Officer, and Mr. T. H. Hollingsworth, Commercial Superintendent and the Office of the Operating Superintendent); W. Bryson, Signals & Telecommunications Engineer; W. Paterson, District Engineer, Glasgow (South); T. W. Brown, District Engineer, Aberdeen; A. C. Jeffrey, District Motive Power Superintendent, Inverness; W. Dunsmuir, District Motive Power Superintendent, Glasgow (North); T. Campbell, Assistant District Engineer, Inverness; M. Harbottle, Assistant District Engineer, Perth; H. Macdiarmid, Assistant District Traffic Superintendent.

Mr. J. Powell, Assistant to Commercial Superintendent, Western Region, British Railways, who, as recorded in our April 13 issue, has been appointed District Goods Superintendent, Paddington, joined the service of the former Great Western Railway at Cardiff in 1920. After serving at various stations in the West Country, he was appointed Junior Assistant to the London District Goods Manager in 1935. Three years later he became Chief Clerk to the London District Goods Manager and in 1943 took charge of Smithfield Goods Depot. Later the same year Mr. Powell moved to Swansea to take up the position of Assistant District Goods Manager. He remained at Swansea until 1946, when he returned to Paddington as Assistant District Goods Manager. Mr. Powell became Assistant to the Commercial Superintendent in 1948.

Mr. A. Lane, Chief of Police, South Western Area, British Transport Commission, who has retired, joined the G.W.R. Police Force at Paddington in 1911. He was seconded to the Provost Marshal's Criminal Investigation Staff in France during the 1914-18 war, and was awarded the Meritorious Service Medal. After his return from military service, Mr. Lane was attached to the G.W.R. Legal Department. In 1936, he became Assistant Chief of Police, and in 1946, Chief of Police, in which capacity, in conjunction with the Crown Forces, he was responsible for the police arrangements taken in connection with many Royal journeys. Early in 1948 Mr. Lane was nominated by General Sir William Slim to represent the Police on the *ad hoc* committee appointed to promote measures to reduce compensation payments for the loss of vulnerable traffic on the railways. As sole representative of the Railway Executive, he also assisted the Ministry of Food in co-ordinating investigations into wholesale thefts of food-stuffs and suspected "black market" activities, and in the New Year Honours list, 1949, he was made an O.B.E. On the formation of the British Transport Commission Police in April, 1949, Mr.

Lane became Chief of Police for the South Western area, comprising the Southern Region (outside London) and the Western Region (south of Oxford) and outside London.

Mr. W. W. Wood, Assistant Chief of Police to the Eastern Region and London Area, British Transport Commission, who has been appointed Chief of Police, South Western Area, commenced his railway police career in 1914 with the London & South Western Railway and from 1916 to 1919 served in the Army. Since 1919 he has risen through the ranks of railway police and at the outbreak of the recent war was Superintendent-in-Charge of the Southern Railway London Goods Division, later taking charge of other London Divisions. From 1944 to May, 1947, he was in charge of Southampton Division and Docks, which period covered the build-up and accomplishment of the D-Day assaults, to the eventual return of troops and gradual transformation of shipping from war to peace status. He was appointed Assistant Chief of Police, Southern Railway, in December, 1947, and since nationalisation has been Assistant Chief of Police to the Eastern Region and to the London Area.

Sir Henry Wilson Smith has been appointed a Director of Guest, Keen & Nettlefolds Limited.

CANADIAN NATIONAL RAILWAYS

The following appointments have been announced by the Canadian National Railways:—

Mr. J. A. Argo, to be Assistant Vice-President in charge of Traffic, Canadian lines.

Mr. Gordon E. Smith, to be General Freight Traffic Manager.

Mr. W. Arnold Kember, to be Assistant General Freight Traffic Manager, Sales.

We regret to record the death on April 12 of Mr. R. A. Struthers, M.C., B.Sc., M.I.Mech.E., Assistant Chief Engineer, Steam Turbine Engineering Depart-

ment, Metropolitan-Vickers Electrical Co. Ltd. Mr. Struthers had been closely associated with the development of the L.M.S.R. 4-6-2 locomotive equipped with a Metropolitan-Vickers turbine, which went into service in 1935.

GOVERNMENT CHANGES

Sir Hartley Shawcross, K.C., Attorney-General, has been appointed President of the Board of Trade, succeeding Mr. Harold Wilson, resigned.

Mr. Alfred Robens succeeds Mr. Aneurin Bevan, resigned, as Minister of Labour & National Service, and becomes a Member of the Privy Council. Mr. Robens was formerly Parliamentary Secretary, Ministry of Fuel and Power.

Sir Frank Soskice, K.C., Solicitor-General, has been appointed Attorney-General.

Mr. A. L. Ungood-Thomas, K.C., has been appointed Solicitor-General, and receives the honour of Knighthood.

Mr. John Freeman, Parliamentary Secretary, Ministry of Supply, has resigned.

Mr. E. A. Grace, of the General Manager's Office, Coras Iompair Eireann, who was a member of the international team of accountants visiting the United States to study cost accounting procedure, has recently returned to Dublin. After leaving New York in the *Nieuw Amsterdam*, Mr. Grace proceeded to Paris to assist in the completion of the team's report before returning to Ireland.

Mr. F. E. Sheppard, B.Sc.(Eng.), A.M.I.Mech.E., A.M.I.Loco.E., has been appointed Sales Engineer, Railway Division, London area, British Timken Limited, with effect from April 30. He served an apprenticeship on the Great Western Railway and was subsequently employed in the drawing office. In 1933 he was appointed to the Assam Railways & Trading Company and subsequently had experience with the Indian State Railways. Mr. Sheppard served two tours on the Nigerian Railway before joining British Timken Limited, where he has been under training.

Presentation to Mr. A. J. Rice



Mr. A. J. Rice, who has retired from the position of Rates & Charges Assistant to the Commercial Superintendent, London Midland Region, and Mr. A. E. Hammett, Commercial Superintendent, London Midland Region, at a recent presentation of a wireless set to Mr. Rice

Institution of Railway Signal Engineers

Development of signal aspects on the Swedish State Railways

At a meeting of the Institution of Railway Signal Engineers in London on April 4, Mr. Ture Hard, Signal Engineer, Swedish State Railways, read a paper on the system of signal aspects adopted by those railways for their electrical signalling installation, many of them of considerable size, installed during the last 30 years. The President of the Institution, Mr. S. Williams, Signal & Telecommunications Engineer, London Midland Region, was in the chair.

The paper outlined the general principles followed in Sweden in defining certain operating characteristics of the lines, stations, junctions, and so on, and the distinction, clearly applied in Sweden, between station limits and the lines outside them, and, following that, between what are called signal sections and block sections. It then defined the various types of fixed signals, hand signals, and signboards used, describing their aspects and appearance in detail, with an explanation of the way in which each was used, either singly or in combination with others, with some technical information essential to an understanding of these points. The reasons for using certain aspects not seen in Great Britain were given.

Discussion

The discussion was opened by Mr. E. G. Brentnall, recently returned from a visit to the Swedish railways in connection with a meeting of the U.I.C. He said that the aspects described by Mr. Hard might appear to be somewhat involved, but in practice they fitted in logically and met requirements well. The Swedish installations were excellently constructed and maintained. It would be interesting to know whether the messages exchanged in telephone block working were booked for record purposes. Had they considered using a red light in the stop aspect of the position-light signals? Presumably the all-white indication was found fully satisfactory. Interesting items were the use of an additional white light with these signals to indicate the setting of points in advance, the use of two and three green lights in proceed aspects for indicating diverging routes, and the checking of his route by the driver in accordance with time table instructions, which would seem to tax the memory. He would be glad to know whether the use of flashing aspects had any influence in general on the life of the lamp bulbs used in the signals. He was not clear from the paper, or from his visit to Sweden, what determined the choice of searchlight type and multi-unit type signals, both of which were used throughout the electrically-signalled areas.

Mr. J. F. H. Tyler said the paper showed how signalling had developed along different lines in different countries. The distinction between the station and the lines outside it had influenced signalling more strongly in some countries than here, where we tried to depart from it and have fewer types of signal. Many Continental lines went through more sparsely populated and less developed areas. Signalboxes, in general, were much closer in Great Britain. The Swedish lines certainly seemed to possess an up-to-date rule book. Ours was reprinted recently, but it was still somewhat wrapped up with history. Our 440 yd. block overlap came to us in that way, but times had changed since it was laid down. In Sweden they had no overlaps, and it would be interesting to know whether they considered them unnecessary. He did not

know how Sweden came to have the flashing white light in distant signals. Telephone block working would not appeal to us here. Had token working ever been considered in Sweden? The A.T.C. trials there were interesting, but it was a question whether the actuating point should be 200 yd. in rear of a signal. Mr. Hard's influence on signalling practice could be seen in Denmark and Norway, where it had had great effect.

Major A. N. Stacey pointed out that telephone block was a recognised regular method in British military railway working. Was any form of authority, such as a paper "line clear," handed to drivers in the Swedish single-line working?

Mr. F. Horler thought it natural that nations geographically and linguistically separated should have developed different lines of thought in these things, as in other fields. It was a great advantage to the Institution to have these other methods brought to its notice. The use of local control of points under permission from the signalbox was interesting, and he would like to know what arrangements were provided to inform a signman of approaching trains where there were several automatic signalling sections between stations.

Mr. W. J. Sadler remarked that students of signalling generally were familiar with the French, Belgian, German, or American schools of thought, but until now he had not seen an explanation of Swedish practice. The flashing light was prominent in it, and he remembered that trials were made with it some 40 years ago on the Furness Railway, to distinguish the red light in a distant signal from the same light in a stop signal. Those trials were not continued and one would like to know the reason. The psychological effect of national spirit and outlook on such questions as speed and route signalling was fascinating to study. Something like it was even seen as between the old separate company-owned railways. The paper would be a valuable contribution to the Institution's proceedings.

Mr. F. G. Hathaway inquired what would be the effect of a failure of the flashing equipment, as flashing green was more restrictive than steady green? Mr. H. J. N. Riddle understood that a flashing apparatus had been produced in Sweden which gave the desired effects without using actual contacts.

Mr. A. Moss pointed out that the problem of operating railway traffic was essentially the same everywhere; it was rather remarkable that different countries seemed to have such different ideas of approaching it. In Great Britain the trend was towards simplicity in signal aspects, but the Swedish system presented a great variety and there even seemed to be inconsistencies in it. He wondered if the drivers had difficulty in interpreting it? In addition, numerous signboards were used. Presumably the headlights were strong enough to show them up at night. Ours would not be able to do that.

The President wished very much to see an example of the type of timetable referred to in the paper, which gave every signal aspect the driver should receive at each station along his route. The use of two and three green lights for diverging routes necessitated providing against the failure of a light and an incorrect less restrictive indication. He could not help admiring the light construction of the over-

head traction standards seen in the pictures exhibited by Mr. Hard; that might be copied to advantage elsewhere.

After Mr. Hard had replied to certain of the points raised, leaving others to be answered in writing, the President moved a vote of thanks to him for his valuable paper.

The Council expects to hold the Summer Meeting from June 1 to 3 at Derby; the Annual Dinner is to take place in London on December 7 next.

Elastic Rail Spike Manufacture in Australia

Elastic rail spikes are now being made in quantity in Australia. Test lengths of track with spikes supplied from the United Kingdom were first installed in Australia in 1938. These proved satisfactory, but it was always intended to organise production in Australia.

The war, shortage of steel, and post-war problems delayed production plans, and it was not until February, 1950, that a pilot production plant with a capacity of about 10,000 spikes a week was set up at Rydalmere, near Sydney.

The manufacturers, Elastic Rail Spike Co. (Aust.) Pty. Ltd., an associate of Elastic Rail Spike Co. Ltd. of London, laid out the plant on a unit basis. Six men are usually employed on one unit, so that more units of similar capacity can be added as the demand for spikes indicates. As there is not sufficient room at Rydalmere for adequate extensions, it is planned to set up a new factory at a more suitable site, also near Sydney, as soon as possible. This new factory will be capable of meeting the demands of the Australian railway systems.

Two designs of elastic rail spike are made in Australia, type "A" and type "T." Type "A" is used when the rail rests on a double shoulder sleeper plate, and type "T" is used when the rail rests either on a single-shoulder sleeper plate or directly on the sleeper. Four spikes of either type are normally used on each sleeper.

New Design of Temporary Bridge

Temporary bridges normally require a fairly severe speed restriction, adversely affecting not only overall speeds but also the capacity of the line. Such restrictions are particularly harmful if the traffic of a double-line railway has to be confined to a temporary single-line bridge.

The engineers of the Essen District of the German Federal Railways have developed a design for a temporary bridge with a span of up to about 65 ft. which can be crossed at full speed. It consists of quadruple shallow main girders, each about 2 ft. 7 in. deep and collectively capable of carrying the heaviest trains. To reduce construction depth the tops of these girders are about flush with rail level, and the rails are carried directly on short cross beams between each pair of main girders, spaced roughly at sleeper spacing.

The abutments consist of pre-fabricated reinforced concrete blocks weighing 17 tons, which may be handled by normal cranes. They are designed so that the soil pressure exerted by them under load will not exceed 2.5 kg. per sq. cm. (35 lb. per sq. in.) for bridge spans up to 65 ft. This maximum pressure has not led to difficulties on reasonably solid embankments. A ballast wall is also cast in one

piece with the abutment. An I-beam 15½-in. high is firmly embedded in the concrete and bolted down into it.

The excavation for the concrete blocks can normally be carried out during the same engineer's possession as that for the positioning of the bridge itself. To ensure the uniform settling of each block, a seating of 2 in. to 3 in. of fine gravel is carefully laid and levelled ready to receive it. To facilitate handling, four hooks are embedded in the concrete of the block. The cranes, standing one on each side of the gap, can each handle one of the blocks from a flat wagon on the adjacent track. Afterwards, the same cranes combine to lift the steel superstructure on to the concrete abutments.

The whole operation of placing a bridge for a single track, including the soil excavation for the abutments, takes no more than six hours. Most of the time is taken up by the removal of the ballast and earth at the site of the abutments, as the small space does not usually allow more than three or four men to work at a time, and two teams work and rest alternately. The placing of the concrete abutments and steel superstructure, including back-filling the abutments, takes 45 min. Another 50 min. are needed for the restoration of the permanent way. After six hours, the track is ready and can be used at full speed two days later.

Rolling Stock for Indian Government Railways

Messrs. Rendel, Palmer & Tritton, Consulting Engineers, will undertake, on behalf of the Government of India, inspection of the new rolling stock recently ordered by the Indian Government Railways, and referred to in our December 1, 1950, and April 6, 1951, issues. The following contracts were placed:—

N. V. Machinenfabriek du Croo & Brauns, Amsterdam, Holland: 1,000 metre-gauge four-wheel covered goods wagons.

Baume & Mercier, S.A., Marpent, Nord, France (London Representatives: Brandhurst & Co., Ltd., Vintry House, Queen Street Place, E.C.4): 1,750 metre-gauge four-wheel open goods wagons; 250 narrow-gauge bogie covered goods wagons; 10 narrow-gauge bogie rail and timber wagons; 150 bogie petrol tank wagons.

La Brugeoise et Nicaise & Delcuve, S.A., Bruges, Belgium (London Representatives: Nye & Menzies, Limited, 62, New Broad Street, E.C.2.): 2,000 metre gauge four-wheel covered goods wagons; 100 narrow-gauge bogie open wagons; 10 narrow-gauge bogie petrol tank wagons.

Simmering-Graz-Pauker, A.G., Vienna, Austria: 250 broad-gauge four-wheel petrol tank wagons.

Etablissements Coder, St. Marcel, Mar-seilles, France: 1,000 metre-gauge four-wheel covered goods wagons.

Maschinenfabrik Augsburg Nürnberg, A.G.: 40 coaches; 75 sets of coach bogies.

Seigener Eisenbahnbedarf, A.G.: 500 covered goods wagons.

H. Fuchs Waggonfabrik, A.G.: 40 coaches. Waggonfabrik Jos. Rathgeber, A.G.: 35 coaches.

Niedersächsische Waggonfabrik Jos. Graff-Elze, G.m.b.h.: 35 coaches.

Waggonfabrik Talbot, A.G.: 30 coaches; 50 hopper wagons.

Düsseldorfer Waggonfabrik, A.G.: 250 covered goods wagons.

Wegmann & Company: 250 covered goods wagons.

Vereinigte Westdeutsche Waggonfabriken, A.G.: 45 coaches; 125 sets of coach bogies; 50 underframes and one set of bogies.

Gebrüder Crede & Company: 25 coaches.

Maschinenfabrik Esslingen, A.G.: 50 sets of coach bogies.

Modern Developments in Track Maintenance

Lt.-Colonel Everard's Presidential address to the Permanent Way Institution

Lt.-Colonel H. B. Everard, Chief Officer Engineering (Maintenance), Railway Executive, gave his presidential address, entitled "Future Trends in Permanent Way," to the London Section of the Permanent Way Institution on April 18.

Lt.-Colonel Everard said that the Permanent Way Institution was established in January, 1884, as the Institution of Permanent Way Inspectors. In 1895 it took its present title to keep pace with the widening activities of the Institution, but it was not until about 1930 that the Institution took on itself the responsibility for the organisation of regular classes of instruction.

The Education Committee was set up in 1930 and in 1934 arranged for examinations to be held. The examinations duly took place in 1935 and have been held regularly ever since, except during the war. Successful candidates were recommended for the award of the Institution's Diploma. Facilities had by now been granted by the railways for members to attend the classes, and it was accepted that their successes should be entered on their staff records.

By 1944 the way had been paved for the taking over of the Institution's instructional and examining organisation by the railways, and for the extension of the advantages of special instruction to all permanent way men.

The modern permanent way man must not only be able to handle delicate and relatively complicated equipment such as measured packing apparatus, but he must understand Hallade records and have more than a nodding acquaintance with the working of power-driven tools. Experience is necessary, now as always, but modern equipment is such that a man must be given a foundation of knowledge on which to build by experience. Nationalisation has thrown permanent way men even closer together than before, said Lt.-Colonel Everard, and it is now necessary first of all to learn the same language about their jobs (for Regional practices still differ) and secondly to pool experiences to find the best and most economical ways of carrying out the various operations which have to be undertaken day by day.

Track Components

So far as future developments in the design of the track is concerned, the general lines have already been laid down, as the decision has been taken to standardise flat-bottom track. Unless some completely new form of motive power is introduced, the weight of rails per yard will not increase materially. In certain directions considerable progress can be made. Great economies may result if it is found possible to produce harder and longer-lived rails without appreciable increase in cost.

Increasing use will be made of the crane method of prefabricated track relaying. Further twin-jib track relayers are to be built; they will be of the greatest use where clearances are limited. The use of such mechanical devices as these is necessary on certain routes where abnormally heavy relaying programmes are being undertaken at present.

The Diploxy method of pre-assembled renewal involves the use of a light subsidiary track laid outside the permanent way to be renewed; on it small gantry cranes travel, carrying the old road out

and the new road in. The method, imported from France, is now undergoing trials.

For day-to-day maintenance, mechanisation is following two lines of development. In the first, the mechanical devices consist mainly of small tools intended simply to facilitate the work of the existing gangs. The other approach envisages a section of line which can be considered as a geographical entity; it may be a first-class main line or a number of branches. All major maintenance is done by a few large gangs, stationed at strategic points and completely equipped with the heaviest and most modern mechanical appliances.

The present practice of carrying out realignment schemes wherever required will be continued. Normally this work is best undertaken in conjunction with relaying, but where high-speed services over new routes are to be instituted, it may prove necessary to carry out a general realignment apart from renewal works.

While much good work has been done in improving the main lines to permit the operation of high-speed trains, there is still much opportunity to eliminate or minimise permanent speed restrictions at junctions. By the development of "two-level" chairs and baseplates it has been found possible to provide transition curves and cant on branch lines at junctions to permit comfortable travel at much higher speeds than previously thought proper.

Formation Improvement

It is usually in clay country that formation improvement works are necessary. To distribute the load from the underside of the sleepers to the formation, and bring the unit loading on the formation to within a figure appropriate to the type of ground, railway engineers usually used crushed stone or slag ballast under the sleepers. This arrangement is no longer sufficient to distribute the greatly increased loads of today, passing more frequently, and excessive unit loading of the formation results. In such circumstances, therefore, major formation improvement works must be undertaken. Soil mechanics technique will in future undoubtedly play an even greater part in formation improvement works.

The future holds great promise for all those connected with track maintenance. Under the leadership of Mr. J. C. L. Train, Member of the Railway Executive, new methods, materials, and appliances are continually being devised, new researches are continually being undertaken, and there is scope for much initiative and ingenuity on the part of all permanent way members.

Nationalisation has made the whole resources of British Railways available for solving problems and it is more than ever certain that the right methods and materials will be used to overcome each difficulty as it arises.

PERMANENT WAY EXHIBITS AT BIRMINGHAM.

—An outstanding feature of the Guest Keen & Nettlefold display at the B.I.F. will be a section of permanent way incorporating specimens of all railway fastenings and accessories manufactured by the G.K.N. group. These will include sleepers, chairs, baseplates, spike anchors, crossing bolts, chair bolts, fish bolts, and so on.

Parliamentary Notes

Debate on Increase in Railway Freight Charges

Opposition request for inquiry defeated by four votes

Mr. Alfred Barnes, Minister of Transport, said in the House of Commons on April 9 that a 10 per cent increase in railway freight charges, parcels rates, and dock and canal charges of the British Transport Commission would take effect from April 16. The text of the memorandum sent by the Transport Tribunal to the Minister on the proposals was given in our issue of April 13.

On April 23, Sir David Maxwell Fyfe (Liverpool, West Derby—C.), moving that the Regulations relating to the new increases be annulled, asked the House to approach the matter with the responsibility appropriate to the grim problem of the ever mounting spiral of the cost of living. To pass on the charges to the consumer was an aggravation because the consumer included other industries whose consequently increased prices would be passed on in turn to those least able to bear them.

The Opposition believed that when they had a chance of halting the spiral of inflation they must take it, and that was why they asked that the further increases in transport charges should not be passed without an inquiry into the possibilities of increased efficiency and economy.

There were three main points to be considered: first, the objections previously made to an inquiry; second, the matters which merited an inquiry at this time; and third, the alternative to an inquiry. Regarding the first point, the mounting deficit of the railways was now too serious for palliatives.

Before the increases last May, the B.T.C. was losing at the rate of about £500,000 a week, which was lessened a year later. When the House was discussing the matter now the losses were running at about the same rate after getting the increases in charges last year. The rate of loss today was about £460,000 a week.

Road transport had been much more successful in meeting rising prices and keeping down overheads. The railways should not be exempt from the general increases in productivity that had occurred since the war simply because they were a service and not a producing industry.

The sort of inquiry he had in mind was a body that could do a quick inquiry and that had one member at least who was an experienced ex-railwayman and another who was interested in industry and commerce and who could see the problem from the point of view of industry.

Saving on Branch Lines

The total saving which the Railway Executive had achieved of £900,000 on branch lines and stations was not enough. Without an inquiry the Government must face the implications of its actions in sweeping aside the recommendations of the Guillaud court of inquiry and substituting its own figure of £12 million without conditions. The first implication was that the State had been brought in as a direct party to wage negotiations to decide on the political needs and necessities of the Government in power. Secondly the theory of the independence of the public board had been completely exploded.

The present system of employing interim increases in charges to keep the railways going was not even an interim answer. If there was nationalisation, with the implication of the State monopoly that there

was no alternative for the consumer, there must be some external efficiency audit.

They would remember that the F.B.I. complained of excessive staffing, duplication of management, and the retention of superfluous and uneconomic facilities. The explanation which the Chairman of the Railway Executive gave by itself showed the need today for an inquiry. The explanation of the first matter was: "We are doing more business now than before the war with less staff after allowing for changed working conditions."

Changed Working Conditions

He asked the House to look at the conditions and compare 1937 with 1949. With regard to work, the overall size and length of track and the amount of rolling stock engaged had not altered much. Engine-miles in 1937 were 597 million and in 1949 they were 550 million. Passenger-journeys had gone down from 1,294 million in 1937 to 992 million in 1949 and freight tonnage from 297 million to 280 million.

Men employed had gone up from 550,000 in 1937 to 625,000 in 1949 although there had been a reduction in the succeeding year. Per hundred engine-hours the number of men employed in 1937 on the freight side was 232 and in 1949 it was 265. Those in the passenger service were respectively 363 and 474. It was not as if there had been any fall in technical operating efficiency.

The undeniable result was that the ability of the railways to handle more traffic with the same physical apparatus had increased, but that the numbers of men employed to man that apparatus over a 24-hr. day had also to be increased, which meant that the output per man-day had not really improved.

What he had always complained about was that the B.T.C. was first of all responsible for policy decisions which could be taken by the Railway Executive, which the Executive would make for itself; and, second, that the Executive passed orders of detailed management to the Regions which ought to be the responsibility of the Regions.

Mr. P. Morris (Swansea, West—Lab.) said that the increased charges would not solve the financial problem. There would have to be other measures, and if they were going to ignore the increased costs the Railway Executive had to meet, then Labour members would have to press for an entire recasting of the financial structure of the industry. Before the Railway Executive could increase even a single cost, it had to go through the machinery of presenting its case before a tribunal, which did not happen in any other industry. Fuel for buses had gone up 140 per cent.; coal, 200 per cent.; tyres, 160 per cent.; steel rails, 115 per cent.; timber sleepers, 315 per cent.; brass bars, 420 per cent.; and clothing, 320 per cent.

Sir Walter Monckton (Bristol, West—C.) said that the new charges would fall most heavily on the basic industries on which we relied for rearmament, industrial prosperity, and the export trade. It was a grave decision to impose a burden in this way now unless it was proved that it was inevitable.

Were these increases, which came neither singly nor seldom, to be sanctioned for three, four, or more years without any

inquiry into the provision of economies and greater efficiency in management? There ought to be such an inquiry and an expert committee had great advantages over the Transport Tribunal in this matter. The holding of such an inquiry would do much to restore confidence in the B.T.C. and the Railway Executive.

The need of the industry was not, as had been the trend over the years, for longer and heavier trains. He believed that the only hope of survival was for lighter, faster, and more freight services.

Viscount Hinchinbrooke (Dorset, South—C.) said they were beginning to see the nationalised industries acting and interacting against each other as reagents of inflation building up a great edifice of rising prices and rising costs. The railways could and should make immense economies in manpower and general expenditure. They should be allowed to go all out for attractive business at rates which they thought people could pay; in other words, to secure the maximum revenue available and to cut their costs in order to strike an agreed balance.

Mr. W. Monslow (Barrow-in-Furness—Lab.) said that the Opposition had made no concrete proposals for solving the present problems. Integration of the railways since the vesting day had been too long delayed and unless it was expedited worse conditions would result. The existing level of charges should be reduced as transport costs were an important factor in total costs.

Mr. Aubrey Jones (Birmingham, Hall Green—C.) said the one solution to the endless succession of increased charges was the rapid adaptation of the equipment of the railways to the decline in traffic. The railways should be put on an economic basis by adjusting charges to individual costs.

Captain Peter Thorneycroft (Monmouth—C.), winding up the debate, said that if the Minister met the demand for an expert inquiry they would not divide the House. What was the policy of the Labour Party about a subsidy for the railways? He believed the Government meant to have one. They were not entitled to assume that those responsible for running the affairs of the B.T.C. had made all the economies possible. The Opposition did not assume that, and demanded that some inquiry should be made.

The 10 per cent. freight charge increases would have wide repercussions throughout the country. Every industrialist who was trying to keep his prices down was bound to be dramatically affected. This type of increase hit most hard the people who were least able to afford it. It hit the special areas, for example, where industrialists and people of all parties had encouraged the introduction of branch factories to diversify industry in a particular area.

Government Reply

Mr. Barnes, replying, said that he could not commit himself to a vague and general inquiry into this complicated problem. Since 1939 the railways had more than paid their way. The annual payment of interest at 3 per cent. on railway stock issued by the British Transport Commission had averaged £29 million. Thus, during the last three years the railways had

earned £87 million in interest and had a deficit today of £51 million. Parliament ought in fairness to acknowledge that, whereas under the previous accounts profits were treated as profits, under nationalisation interest on stock was treated as a cost item. None could examine the figures and say that British Railways were bankrupt or that the future was hopeless. The industry had a great record, and its engineers, operators, and personnel compared well with those of other industries in this country.

Every increase in railway charges had followed a heavy and general rise in commodity prices. In not one instance in the past eleven years had railway rates stimulated increases in prices. Transport increases had not been the primary motivating power which had raised the price level of industry generally. All the facts of the last 12 months had demonstrated that industry generally had no greater difficulty in adjusting itself to the increase of 16½ per cent. of 12 months ago than it had difficulty in adjusting itself to other increases.

The argument for a special inquiry presupposed that the railway industry was inefficient, and yet no one had made such a statement. Maintaining that the Railway Executive had been directing special attention to economies, Mr. Barnes said it had closed 113 branch lines, representing a net annual saving of £400,000, and also 142 stations. Last year, pilferage claims paid amounted to £1,406,835, compared with £2,778,367 in 1948. That reduction alone was a clear indication of improved administration, although he agreed that such circumstances could not be defended in any public service.

The motion was negatived by 297 votes to 293.

Questions in Parliament

British Railways Economies

Sir Waldron Smithers (Orpington—C.) on April 11 asked the Minister of Transport why he did not accept the recommendations of the Central Transport Consultative Committee, as indicated in their annual report for 1950, that the Transport Commission be pressed to economise rather than to increase their charges.

Mr. Alfred Barnes, in a written answer, stated: As I indicated in the House on April 27, 1950, when I announced the increase, I was satisfied that there was no means of meeting the financial problem then facing the railways by any rapid and substantial economies, though of course the Commission is achieving economies where possible.

Nigerian Railway

Mr. Ronald Williams (Wigan—Lab.) on April 11 asked the Secretary of State for the Colonies whether the inquiries which were made relating to the preparation of the Pallant Report on the operating problems of the Nigerian Railway, included consultations with the railway trade unions; and whether labour relations on the Nigerian railway had improved since the publication of the report.

Mr. James Griffiths: Mr. Pallant had discussions with the leaders of the railway trade unions. There has been some improvement in the relationship between management and unions since the publication of the report.

B.T.C. Membership

Sir Wavell Wakefield (St. Marylebone—C.) on April 16 asked the Minister of Transport whether he had considered the fact that the experience of three of

the four permanent members of the B.T.C. had been primarily related to railways and that the Commission lacked persons with wide experience in road transport; and what steps he proposed to take.

Mr. Alfred Barnes in a written answer stated: I had regard to the previous experience of the members of the Commission when I appointed them and I am satisfied that, taking the Commission as a whole, the members make up, in their qualifications and previous experience, a balanced body well able to undertake all its responsibilities.

Contracts & Tenders

The Turkish State Railways have ordered 120 bogie passenger coaches from the Waggonfabrik Uerdingen A.G.; delivery is to begin in the autumn of this year.

Henschel & Sohn A.G., of Kassel, Germany, has received from the Portuguese Ministry of Finance an order for six steam locomotives for service on the Beira Railway, in Portuguese East Africa.

An order from D. Wickham & Co. Ltd. has been placed with Leyland Motors Limited for a diesel engine unit to be installed in a railcar being built for the Guacui-La Paz Railway, Peruvian Corporation.

The following contracts have recently been placed by the Egyptian Government:—

Baume & Merpent, S.A., Marpent, Nord France (London Representatives: Brandhurst & Co. Ltd., Vintry House, Queen Street Place, E.C.4): 180 four-wheel fertiliser vans.
Gregg Car Co. Ltd., Brussels, Belgium

(London Representatives: Railway Mine & Plantation Equipment Limited, Imperial House, Dominion Street, E.C.2): 180 four-wheel fertiliser vans.

La Brugeoise et Nicaise & Delcuve, S.A., Bruges, Belgium (London Representatives: Nye & Menzies Limited, 62, New Broad Street, E.C.2): 60 40-ton hopper ballast wagons.

Nikex Hungarian Trading Company (Ganz): 24 second class carriages.

The East African Railways & Harbours have placed a contract valued at £1,700,000 with J. L. Kier & Co. Ltd. for the construction of deep-water berths at Dar-es-Salaam.

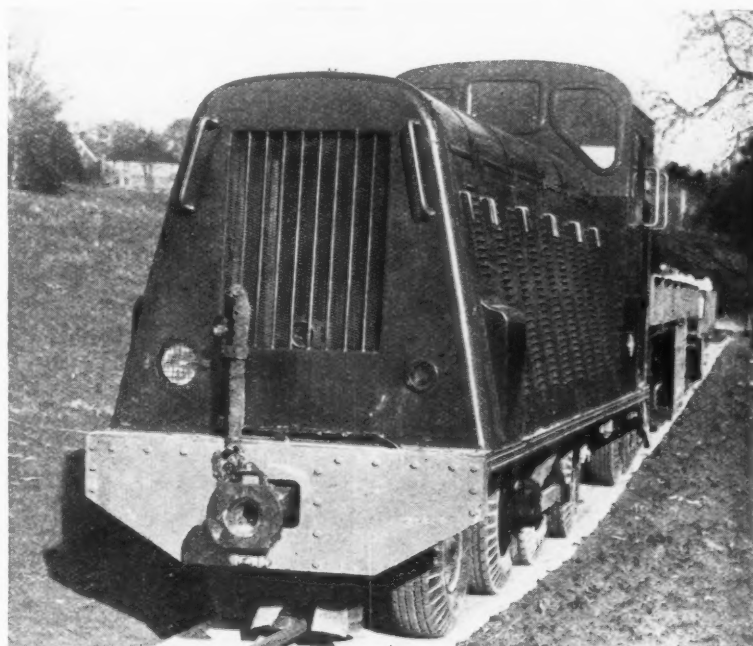
The contract provides for three berths consisting of precast concrete blocks weighing up to 15 tons each, and the wharf is to be some 1,800 ft. in length.

The Board of Trade, Commercial Relations & Exports Department, Special Register Information Service, stated recently that the Commercial Secretary at the British Embassy, Montevideo, has reported that a call for tenders has been issued by the Ferrocarril Central del Uruguay for the supply of two heavy motor rail-trolleys and two trailers.

Tenders should be addressed to the Administracion de Ferrocarril Central del Uruguay, Calle La Paz No. 1095, Ciudad, Uruguay, and should reach there not later than 3 p.m. on May 17, 1951.

Interested United Kingdom firms are reminded that local representation is essential for the purpose of submitting tenders. A copy of the Specification No. C.M.131 (in Spanish), together with a copy of the drawing, is available for inspection by representatives of interested United Kingdom manufacturers at the Commercial Relations & Exports Department, Board of Trade.

Brockhouse Uniline Locomotive



Locomotive with Dunlop low-loading tyres, Westinghouse brakes, and A.B.C. couplers, powered by a Meadows 90-b.h.p. oil engine, used in the Brockhouse Uniline transport system (see article on page 418 of our April 13 issue)

Notes and News

British Railways Coal and Steel Carrying.

—During the week to April 16, British Railways moved 3,316,000 tons of coal. Figures for iron and steel show that 207,900 tons were conveyed during the week ended April 7, from principal steel works.

Barsi Light Railway Co. Ltd.

—The directors have declared a dividend of 2 per cent., actual, in respect of the half-year ended September 30, 1950, on the ordinary stock, payable on May 30, 1951, less income tax at 9s. 6d.

L.M.R. Dramatic Society.—British Railways (London Midland Region) Dramatic Society is to present Dodie Smith's three-act play "Dear Octopus" at the Rudolph Steiner Theatre, Baker Street, on the nights of May 2 to 5, inclusive.

Institution of Civil Engineers.—At a meeting of the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, to be held at 5.30 p.m. on May 8, Mr. A. Dean, Civil Engineer, North Eastern Region, British Railways, will read a paper on "Pre-Stressed Concrete Applied to the Construction of Railway Bridges and Other Works."

Allowance for Foreign Travel Unchanged.

—The tourist allowance for foreign travel is to remain unchanged at £100 for adults and £70 for children for the year commencing May 1. The Treasury has also announced that there will be no change in the arrangements under which there is no limit to the amount of currency allowed for *bona fide* travel in Denmark, Norway, and Sweden.

Eastern Region Women's Ambulance Competition.

—At the Bishopsgate Institute on April 3 the Eastern Region women's ambulance teams met in the Regional finals, and the winning team, as last year, was the Norwich women's team, which won with a lead of 34 points; the runners up were Marylebone "B" team. The shield, contributed by Mr. H. H. Halliday, Regional Staff Officer, was presented to the winning team by Mr. C. K. Bird, Chief Regional Officer, Eastern Region, who ex-

pressed his satisfaction that the movement had now succeeded in securing nearly 200 women in the Eastern Region to take up first aid and also that practically every district in the Region was represented in the day's competition.

Assistant Mechanical Engineer Required.

—An assistant mechanical engineer, with railway rolling stock experience, is required for a consulting engineer's office in Westminster. See Official Notices on page 483.

Thirty-one Special Trains for F.A. Cup Final.

—The London Midland Region of British Railways has arranged to bring over 18,000 passengers from the Midlands and the North by 31 special trains for the F.A. Cup Final on April 28.

A. Reyrolle & Co. Ltd.

—The directors of A. Reyrolle & Co. Ltd. recommend a final dividend of 7½ per cent., making 15 per cent., less tax, for 1950 (the same as for last year) on the ordinary capital of £1,017,647. The net profit of £775,495 compares with £587,207 for 1949 after taxation of £915,000 (against £713,585).

Wickman Mobile Demonstration Unit.

—Equipped with a comprehensive range of tool servicing equipment and accompanied by a team of lecturers and demonstrators, the Wickman mobile demonstration unit will shortly tour the production areas of Great Britain. Demonstrations of carbide tool grinding will be given, supported by a series of lectures with the aid of sound and strip-films.

Excursion to Crewe Works.

—The London Midland Region will run two special trains from Euston direct to Crewe Works on August 9 and 23 in connection with the Festival of Britain. The all-in charge of 30s. return includes meals on the train on outward and return journeys. Guides will conduct visitors round the works. The train will be hauled by the first British Railways standard locomotive No. 70000, *Britannia*, built at Crewe.

The Indian State Railways Dinner.

—As briefly intimated in our issue of February 23 last, the annual Indian State Railway Dinner will be held on Monday, May

28, at 7 for 7.30 p.m. at the Rembrandt Hotel, Thurlow Place, S.W.7. The chair will be taken by Sir Leonard Wilson, K.C.I.E.; lounge suits will be worn. Tickets may be obtained from Mr. N. Calder, Hon. Sec., I.S.R. Dinner Club, 16, St. James's Square, S.W.1, price 17s. 6d. each. The dinner will be preceded by a tea for officers and/or their wives from 4 to 6 p.m. on the same date and at the same hotel; tickets 2s. 6d. each. A limited number of guests may be invited to the tea only.

British Railways Boxing Finals.

—At the Royal Albert Hall, London, on April 24, the semi-finals and finals of the Railway Executive amateur boxing championships were held. Again great keenness was shown. The cup was won for the second year in succession by the North Eastern Region with 23 points, and the Southern Region came second with 19 points. Mr. John Elliot, Chairman of the Railway Executive, presented trophies to the winners and the Regional challenge shield to Mr. H. A. Short, Chief Regional Officer.

Railway Strike in Guatemala.

—An agency message states a general rail strike began in Guatemala on April 21. A complete walk-out of workers was reported. The strike began at the port of Puerto Barrios when the railway company refused to discharge some administrative employees whom the workers' union wanted dismissed. Yesterday, as it spread and halted the international service with El Salvador, the union called for a general strike to begin today. Railway officials have said there was no hope of an immediate settlement. So far the Government had indicated no action.

Collision Near Queens Park, Glasgow.

—On Saturday, April 21, the 1.24 p.m. special football train from Glasgow Central to Mount Florida, while standing in the section approaching Queens Park Station, Scottish Region, was run into from the rear by the 1.27 p.m. from Glasgow Central to Kirkhill passenger train. Of the 54 persons taken to Glasgow Infirmary, 22 were detained; two persons were killed and a further death occurred on the way to the Infirmary. The Ministry of Transport Inquiry opened at the Central Station Hotel, Glasgow, on April 26, Colonel R. J. Walker, Inspecting Officer of Railways, presiding.

English Steel Corporation Exhibits.

—Drop forgings shown by the English Steel Corporation Limited at the B.I.F. will include jet turbine discs and crankshafts for aeroplanes and commercial vehicles. Another exhibit will be a range of automatic couplers for railways, mine cars, and so on, ranging from a large knuckle-type coupler complete with drawgear, weighing 6 cwt., down to half-size Willison and A.S.F. types. The range of suspensions will be covered by a large selection of springs, laminated, coil and volute, for rail and road vehicles. The products of the works at Openshaw will be covered by a comprehensive display of tools. Shown for the first time in this country will be a six-throw diesel engine crankshaft pressed by the R.R. continuous grain-flow process.

Vulcan Foundry Results.

—After charging £206,378 (against £146,886 in 1949) for tax and crediting £14,307 (£9,896) in respect of a dividend from a subsidiary, the profits of the Vulcan Foundry Limited for 1950 were £151,984 (£119,263). Reserve for pensions is allocated £10,000 (the same) and employees' welfare £15,000 (£10,000). After



Mr. C. K. Bird, Chief Regional Officer, Eastern Region, presenting the Halliday Shield to the winning team in the 1951 Eastern Region Women's Ambulance Competition (see paragraph above)

OFFICIAL NOTICES

ASSISTANT Mechanical Engineer with Railway Rolling Stock experience required for Westminster Consulting Engineer's Office. Preference will be given to an engineer with diesel and/or electric traction experience. Write giving details of age, education and experience in chronological order, together with the salary required, to Box 62, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

AN Insurance Organisation with extensive connections in the transport industry has vacancies on its Outdoor Staff for a number of young men. Excellent opportunities to those possessing good personality and anxious to succeed. Write stating age to Box 46, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth. 8½ in. by 5½ in. 82 pp. Diagrams. 5s. By post 5s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

DIRECTORY OF RAILWAY OFFICIALS & YEAR BOOK. A useful reference book for railway officers, engineering firms, and all who do business with railways. The only Directory which enables one to find the right railway and the right officer at the right moment. Issued July each year. Price 30s. net. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

WE buy used or unserviceable Steel Files at good prices, in lots of 2 cwt. or more.—THOS. W. WARD LIMITED, R.S. Department, Albion Works, Sheffield.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth. 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

placing £80,000 (£65,000) to general reserve, and providing £2,750 (same) for the preference dividend the directors recommend a dividend of 7 per cent. (5 per cent.) and a bonus of 2 per cent. (1½ per cent.) on the ordinary stock. These together will absorb £39,931 net (£30,212), leaving £58,604 (£54,301) to go forward.

European Wagon Pool.—The Franco-German wagon pool referred to in our April 6 issue is effective from May 1. It is hoped other railways will join the pool, which will form the nucleus of an international European pool. Wagons will

to contingencies reserve and £10,000 to discretionary staff reserve. The company began 1950 with a large order book, the level of which was constantly maintained, but efforts to keep production at the level required to cope with this volume of orders were frustrated by an acute shortage of skilled labour. The report was adopted and a dividend of 17½ per cent. was approved.

Craven Brothers (Manchester) Limited.—The net profit for 1950 of Craven Brothers (Manchester) Limited, after allowing for tax, was £82,652 (£64,946 for 1949 including a surplus provision of £13,610). The preference dividend requires £5,500 (the same) and the ordinary distribution is unchanged at 15 per cent., leaving a carry forward of £295,034 (£244,732). The balance sheet shows current assets of £791,000 (£580,000), including work-in-progress, stocks, and so on, of £576,000 (£546,000), less instalments of £67,000 (£164,000). Current liabilities and provisions are £375,000 (£215,000), of which £115,000 (nil) represented advance payments on suspended contracts and £59,000 (£13,000) bank overdrafts.

Routes Map of London Festival Centres.—A diagrammatic map showing Underground and bus routes from main-line termini in West, North, and East London to the South Bank Exhibition and other London centres of the Festival of Britain has been prepared by the London Midland Region of British Railways. The map is

for use on the backs of handbills advertising Festival excursions to London from provincial centres in all Regions except the Southern, which is producing a similar design.

Institute of Transport.—The provisional programme for the 1951-52 Session of the Institute of Transport includes a proposed visit to the Netherlands in May or June, 1952.

Great Northern Railway (Ireland): Take-over Difficulties.—Mr. W. V. McCleery, Northern Ireland Minister of Commerce, told the Ulster House of Commons on April 24 that preliminary steps towards taking over the Great Northern Railway (Ireland) were proving difficult. During the negotiations the position of the railway had not been improving, and the directors were now reduced to using for current needs moneys earmarked for contingencies.

Glenfield & Kennedy Limited.—Increased dividend and a bonus issue to shareholders are announced by Glenfield & Kennedy Limited. The company is paying a final dividend of 20 per cent., less tax, against 15 per cent., making a total for 1950 of 25 per cent., as compared with 20 per cent. for 1949. Treasury consent has been obtained to the proposal to capitalise part of the reserves by the issue of 700,000 ordinary shares of £1 each to existing ordinary stockholders in the proportion of one new share for every £1 ordi-

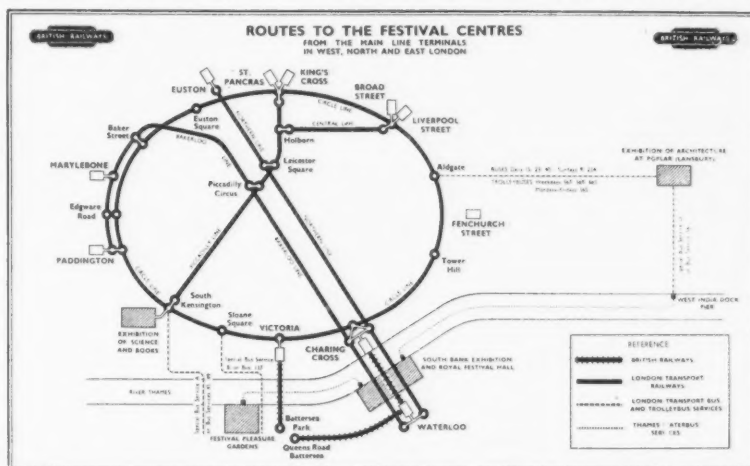


Franco-German wagon marking

bear the designation EUROP stencilled above the usual designation of the country of origin, e.g., SNCF (Société Nationale des Chemins de fer Français) for France, as shown in the accompanying illustration, and DB (Deutsche Bundesbahn) for Germany.

Compagnie Internationale des Wagons-Lits et des Grands Express Européens.—The dividend which the Compagnie Internationale des Wagons-Lits et des Grands Express Européens is to pay for 1950 will amount to Belg.fr.5 for each preference share, and to Belg.fr.4 for each ordinary share. In 1950, dividends in arrear were paid at the rate of Belg.fr.5 net for each preference share for each of the years 1939 to 1949 included, and of Belg.fr.4 net per ordinary share for each of the same years.

G. D. Peters & Co. Ltd.—In his statement circulated with the report and accounts of G. D. Peters & Co. Ltd., the Chairman, Lord Inverforth, announces that the net profit for the year, after charging all expenses, but before making provision of £84,000 for taxation, amounts to £160,671. The directors have again transferred £25,000 to general reserve, £25,000



Map of routes to Festival of Britain centres (see paragraph above)

nary stock now held. The consolidated net profit amounts to £399,970, against £251,585, arrived at after charging taxation of £547,135 against £350,282, and after crediting provisions for taxation no longer required of £10,198 against £4,159. After again transferring £100,000 to plant replacements and contingencies reserve, together with £100,000 against nil to general reserve, £61,290, against £60,633, is carried forward.

B.T.H. Exhibits at the B.I.F.—Exhibits by the British Thomson-Houston Co. Ltd. at the B.I.F. will include power station and industrial switchgear, high-voltage condenser units, motors from fractional sizes up to 50 h.p., and Mazda lighting equipment. Many other items, including typical B.T.H. control gear for use in every branch of industry, will be shown, with a demonstration of Stacrep hoist control.

Assam Railways & Trading Co. Ltd.—The trading profit of the Assam Railways & Trading Co. Ltd. for the year ended March 31 advanced to £223,533 from £77,359 for 1948-49. With provision for depreciation at £44,264, against £34,286, taxation charged at £129,915, against £39,511, the net profit came out at £58,247, or an increase of £44,124 on the year. Reserve for development and replacement of fixed assets receives £30,000, against £10,000, general reserve being allocated £8,484, while the payment of dividends on the "A" stock for the 18 months to March 31, 1949, requires £20,790 (nil). The balance carried forward will be increased from £11,454 to £18,911.

Forthcoming Meetings

April 27 (Fri.).—Junior Institution of Engineers, Annual Dinner, at the Connaught Rooms, Great Queen Street, London, W.C.2, at 6.15 for 6.45 p.m.

April 27 (Fri.).—Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m. Discussion on "The New Factory," by Mr. J. G. Bulger.

May 1 (Tue.).—Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, at 5.30 p.m. "The Design & Construction of the Baghdad Railway and Road Bridge," by Mr. A. E. Reid and Mr. F. W. Sully.

May 1 (Tue.) to 3 (Thu.).—Public Transport Association, 1951 Conference at Bournemouth.

May 3 (Thu.).—Electric Railway Society, at the Fred Tallant Hall, Drummond Street, London, N.W.1, at 7.30 p.m. "Track Layout for Intensive Electric Services," by Mr. G. T. Moody.

May 3 (Thu.).—Engineers' Guild, Metropolitan Branch, at Caxton Hall, Westminster, at 6 p.m. "How Engineers Can Promote International Understanding," by Mr. C. W. Niel McGowan, Chairman, Metropolitan Branch.

May 4 (Fri.).—Scottish Society of Students of the Locomotive, at 302, Buchanan Street, Glasgow, at 7.30 p.m. "Passenger Locomotives of the Caledonian Railway, 1895-1922," by Mr. Montague Smith.

May 5 (Sat.).—Historical Model Railway Society, at the headquarters of the Stephenson Locomotive Society, 32, Russell Road, London, W.14, at 3 p.m. "The Isle of Wight Railways," by Mr. R. Day.

Railway Stock Market

Renewed talk of an early General Election caused markets to mark time for a while after the activity in evidence since the Budget. There was no pronounced selling, but buyers were holding off earlier in the week, awaiting political news. Later, however, they returned again, and industrial shares resumed an upward trend, encouraged by estimates of further increases in dividends soon due to be announced. Despite the big gains in prices in recent weeks, the majority of industrial shares still offer reasonable yields, and scope for good appreciation in value if dividends are increased. Now that Mr. Gaitskell has told the Capital Issues Committee that there is no objection to moderate increases it is not surprising that many directors take the view that somewhat higher dividend payments are justified. Many companies outside the rearmament and export trade, however, will be hit by shortages of essential materials.

Political uncertainty at home tended to draw attention to overseas securities and among these foreign rails have been rather more active. The good yield of 9½ per cent., together with outstanding dividend arrears, brought in buyers for Antofagasta preference stock, which strengthened to 51, while the ordinary stock at 7½ was slightly better on balance. Taltal shares were 17s. 3d. and Nitrate Rails 23s. San Paulo 10s. units have firmed up to 15s. 6d. and Brazil Rail bonds were 86s. 3d. There was rather less business reported in Leopoldina stocks, however, although prices were firm; the ordinary were 10½, the preference 27½, the 4 per cent. debentures 94, and the 6½ per cent. debentures 141. Leopoldina Terminal 5 per cent. debentures were 94 and the ordinary units 1s. 3d.

Bolivar "A" debentures at 58, and La Guaira ordinary stock at 84½, have been well maintained, though quotations were not tested by much business. Mexican stocks remained active; Mexican Central "A" were 64½ and National of Mexico 4½ per cent. non-assented stock 41½. Manila "A" bonds were 75 with the preference shares 7s. 6d. United of Havana stocks have attracted rather more business, and the 1906 debentures, after easing, firmed up a little to 16½. As usual, there was a good deal of activity in Canadian Pacifics,

which, however, after rising to close on 59, eased with most dollar securities and came back to 56½. The market view is that there seem reasonable possibilities of a higher dividend on "Canpacs" and that meanwhile there is a not unreasonable yield of nearly 4½ per cent.

Business in road transport shares has been small with prices inclined to ease on fears that the higher cost of petrol and rising costs generally must mean lower dividends in due course. Though in respect of the past year the market remains hopeful that the majority of dividends will be maintained. Southdown were 98s. 9d., West Riding 56s., and Lancashire Transport 58s., while Devon General changed hands around 131s. B.E.T. deferred stock was £537½, at which there is a not unattractive yield of 4½ per cent. on the basis of the 25 per cent. dividend last year, and the market is talking of the possibility of an increased dividend.

Locomotive building and engineering shares have been more active helped by the Anglo-Argentine trade agreement which permits unfreezing of profits of British-owned companies. Hurst Nelson have risen sharply to 63s. 6d. Birmingham Carriage were 36s. and T. W. Ward firm at 72s. 3d. Beyer Peacock were 34s., North British Locomotive 18s. 9d., and Vulcan Foundry 31s. 4½d. Wagon Repairs 5s. shares were 15s. 9d. and Charles Roberts 101s. 6d. Gloucester Wagon strengthened to 17s. 3d. Elsewhere Vickers, after a big advance on the doubled dividend of 12½ per cent., showed a partial reaction to 51s. 9d. The prospect of a change of Government opens up the possibility of the unscrambling of nationalisation and an opportunity to buy back steel assets.

ELECTRICAL EXHIBITS AT BIRMINGHAM.—The importance at the present time of equipment for the generation, transmission, and distribution of electrical power has led the General Electric Co. Ltd. to devote the whole of its stand at the B.I.F. to its manufacturing resources for this class of work. The stand will be divided into two parts, one devoted to turbo-alternators and coal-handling plant, and the other to various designs of indoor switchgear.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date	
				Total this year	Inc. or dec. compared with 1948/49		Total	Increase or decrease
							1949/50	
South & Central America	Antofagasta ...	811	13.4.51	£ 141,250	+ £ 83,390	15	1,494,300	+ 571,430
	Costa Rica ...	281	Feb., 1951	c1,039,485	+ c354,453	35	c8,375,739	+ c1,770,937
	Dorada ...	70	Mar., 1951	34,235	+ 14,231	13	108,108	+ 18,363
	Inter. Ctl. Amer. ...	794	Feb., 1951	\$1,233,459	+ \$51,829	8	\$2,548,803	+ \$80,536
	La Guaira ...	22½	Sept., 1950	\$68,726	+ \$39,529	39	\$725,535	+ \$241,943
	Nitrate ...	382	15.8.50	10,816	+ 8,656	32	286,336	+ 6,203
	Paraguay Cent. ...	274	13.4.51	£237,608	+ £85,627	41	£8,348,952	+ £72,426,096
	Peru Corp. ...	1,050	Mar., 1951	\$7,903,000	+ \$711,300	39	\$69,671,000	+ \$15,273,942
	" (Bolivian Section) ...	66	Mar., 1951	Bs. 14,210,000	+ Bs. 8,601,500	39	Bs. 110,467,000	+ Bs. 23,120,336
	Salvador ...	109	Feb., 1951	c244,000	+ c5,000	35	c1,327,000	+ c27,000
Canada	Taltal ...	154	Mar., 1951	\$2,091,357	+ \$308,104	39	\$14,683,148	+ \$2,461,284
	Canadian National ...	23,473	Mar., 1951	17,554,000	+ 2,599,000	13	47,640,000	+ 8,750,000
	Canadian Pacific ...	17,037	Feb., 1951	10,318,000	+ 1,517,000	8	21,234,000	+ 4,251,000
Various	Barsi Light* ...	167	Mar., 1951	33,150	+ 3,420	52	350,745	+ 3,225
	Egyptian Delta ...	607	10.10.50	18,245	+ 1,296	28	319,911	+ 24,005
	Gold Coast ...	536	Jan., 1951	309,279	+ 176,104	44	2,574,365	+ 260,269
	Mid. of W. Australia ...	277	Jan., 1951	41,990	+ 7,585	31	277,213	+ 65,652
	Nigeria ...	1,900	Jan., 1950	502,360	+ 39,978	44	5,017,814	+ 266,573
	South Africa ...	13,347	24.3.51	1,819,714	+ 409,231	51	88,056,398	+ 12,769,221
	Victoria ...	4,744	Dec., 1950	1,299,615	+ 566,411	26		

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1